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# CONTENTS


| TRADE NAME | MODEL | SET AND FOLDER No. |
|---|---|---|
| Admiral | CU2225Z, CU2226Z, CU2227Z, C2225Z, C2226Z, C2227Z, FU2216Z, FU2217Z, FU2218Z, F2216Z, F2217Z, F2218Z, TU2232, TU2232Z, TU2236Z, TU2237Z, T2236Z, T2237Z, T2239Z (Ch. 22A3, A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2) Tel. Rec. | 260-2 |
| Aircastle | 652.5C1M, V | 260-3 |
| Aircastle | 652.5T5E, V | 260-4 |
| Airline | 61-6789 | 260-5 |
| Collins | 51J-3 | 260-6 |
| Emerson | 805B (Ch. 120202-D) | 260-7 |
| Grommes | LJ-2 | 260-8 |
| Magnavox | 252M (CR700 & AMP132) | 260-9 |
| Don McGohan | MG60 | 260-10 |
| Mitchell | 1271, 1272, 1273 | 260-11 |
| Packard-Bell | 1841, 1842, 1941, 1942 (Ch. 1840) Tel. Rec. | 260-12 |
| Philco | 18B3002, 18B3102, L, 18B3103 (Code 140) (Ch. R-191, D-191), 18BU3002, 18BU3102, L (Code 140) (Ch. R-191U, D-191), 18BU3102, L, 18BU3103 (Code 141) (Ch. R-192U, D-191), 22B4002, G, L, 22B4004, 22B4104, L, 22B4106, 22B4109HM, 22B4150, L, 22B4302, 22B4304, 22B4306, L, 22B4307HM (Code 140) (Ch. R-191, D-191), 22BU4002, L (Code 140) (Ch. R-191U, D-191), 22BU4002, L (Code 141) (Ch. R-192U, D-191), 22BU4004 (Code 140) (Ch. R-191U, D-191), 22BU4004 (Code 141) (Ch. R-192U, D-191), 22BU4102, L (Code 140) (Ch. R-191U, D-191), 22BU4102, L (Code 141) (Ch. R-192U, D-191), 22BU4106 (Code 140) (Ch. R-191U, D-191), 22BU4106 (Code 141) (Ch. R-192U, D-191), 22BU4109HM (Code 140) (Ch. R-191U, D-191), 22BU4109HM (Code 141) (Ch. R-129U, D-191), 22BU4150, L (Code 140) (Ch. R-191U, D-191), 22BU4150, L (Code 141) (Ch. R-192U, D-191), 22BU4302 (Code 140) (Ch. R-191U, D-191), 22BU4302 (Code 141) (Ch. R-192U, D-191), 22BU4304 (Code 140) (Ch. R-191U, D-191), 22BU4304 (Code 141) (Ch. R-192U, D-191), 22BU4306, L (Code 140) (Ch. R-191U, D-191), 22BU4306, L (Code 141) (Ch. R-192U, D-191), 22BU4307HM (Code 140) (Ch. R-191U, D-191), 22BU4307HM (Code 141) (Ch. R-192U, D-191) Tel. Rec. Prod. Chg. Bul. 111 | 260-1 |
| RCA Victor | 4-C-531, 4-C-532, 4-C-533, 4-C-534, 4-C-535 (Ch. RC-1144) | 260-13 |
| Travler | 5180B, M | 260-14 |
| Travler | 5305 | 260-15 |
| Truetone | 2D1430C Tel. Rec. | 260-16 |
| Webster-Electric | 605M, S, 606M, S, 610M, S | 260-17 |

PHILCO MODELS 18B3002, 18B3102, L, 18B3103(Code 140)(Ch.R-191, D-191), 18BU3002, 18BU3102, L(Code 140)(Ch.R-191U, D-191), 18BU3102, L, 18BU3103 (Code 141)(Ch. R-192U, D-191), 22B4002, G, L, 22B4004, 22B4102, L, 22B4106, 22B4109HM, 22B4150, L, 22B4302, 22B4304, 22B4306, L, 22B4307HM(Code 140)(Ch.R-191, D-191), 22BU4002, L (Code 140) (Ch.R-191U, D-191), 22BU4002, L(Code 141)(Ch.R-192U, D-191), 22BU4004(Code 140)(Ch.R-191U, D-191), 22BU4004(Code 141)(Ch.R-192U, D-191), 22BU4102, L(Code 140)(Ch. R-191U D-191), 22BU4102, L(Code 141)(Ch.R-192U, D-191), 22BU4106(Code 140)(Ch.R-191U D-191), 22BU4106(Code 141)(Ch.R-192U, D-191), 22BU4109HM(Code 140)(Ch.R-191U, D-191), 22BU4109HM(Code 141)(Ch.R-192U, D-191), 22BU4150, L(Code 140)(Ch.R-191U, D-191), 22BU4150, L(Code 141)(Ch.R-192U, D-191), 22BU4302(Code 140)(Ch.R-191U, D-191), 22BU4302(Code 141)(Ch.R-192U, D-191), 22BU4304(Code 140)(Ch.R-191U, D-191), 22BU4304(Code 141)(Ch.R-192U, D-191), 22BU4306, L(Code 140)(Ch. R-191U, D-191), 22BU4306, L(Code 141)(Ch.R-192U, D-191), 22BU4307HM(Code 140)(Ch.R-191U, D-191), 22BU4307HM (Code 141)(Ch.R-192U, D-191)

PRODUCTION CHANGES
BULLETIN 111

| SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 12 IN SET 231 | |
|---|---|
| Ch. R-191, U D-191 | Philco Models 18B3002, 18B3102, L (Code 140) (Ch. R-191 , D-191), 18BU3002, 18BU3102, L (Code 140) (Ch. R-191U, D-191), 22B4002, L, 22B4004, 22B4102, L, 22B4106, 22B4109HM, 22B4150, 22B4302, 22B4306, L, 22B4307HM (Code 140) (Ch. R-191, D-191), 22BU4002, L 22BU4004, 22BU4102, L, 22BU4106, 22BU4109HM, 22BU4302, 22BU4304, 22BU4306, L and 22BU4307HM (Code 140) (Ch. R-191U, D-191) television receivers are covered in Photofact Folder 12 – Set 231. In later production, models 18B3103, 22B4002G, 22B4150L (Code 140) (Ch. R-191, D-191) and 22BU4150, L (Code 140) (Ch. R-191U, D-191) have been added to this group. |
| Ch. R-192U, D-191 | Models 18BU3102, L, 18BU3103, 22BU4002, L, 22BU4004, 22BU4102, L, 22BU4106, 22BU4109HM, 22BU4150, L, 22BU4302, 22BU4304, 22BU4306, L, 22BU4307HM (Code 141) (Ch. R-192U, D-191) have also been added. These models are identical to the models covered in Photofact Folder 12 - Set 231, except the R-192U RF chassis is used. Ch. R-192U is identical to Ch. R-191U, except a different VHF tuner (part #76810) and UHF tuner (UT20D) are used. Schematics of these tuners are given in this bulletin.<br>In later production of Ch. R-191, U, R-192U and D-191. The following production changes were made. |
| Ch. R-191, U (Runs 2 thru 6) | All production changes in Ch. R-191, U, Runs 2 thru 6 are covered in Photofact Folder 12 – Set 231, except for the following omission.<br>A 3.3KΩ, ±10%, ½ watt resistor was added across L28, to eliminate the possibility of video oscillations at minimum contrast. This change was made in Run 2. |
| Ch. R-191, U (Run 7) | TO PREVENT OVERLOADING<br>A 1.8KΩ, ±10%, 1 watt resistor was added, in series, with the screen of the video output tube (V7) to 260V (T). |
| Ch. R-191, U (Run 8) | TO IMPROVE SOUND GAIN, REDUCE SYNC BUZZ AND IMPROVE SYNC PERFORMANCE<br>R77 was reduced from 27KΩ to 15KΩ.<br>R42 was deleted.<br>C62 was increased from 150MMF to 330MMF.<br>C58 was reduced from 18MMF to 10MMF.<br>C60 was reduced from .01MFD to .0022MFD. |
| Ch. R-191, U (Run 9) | TO ELIMINATE OSCILLATION IN SYNC SEPARATOR STAGE<br>The chassis grounding points for C73 and C76 were relocated. |
| Ch. R-191, U (Run 10) | TO REDUCE CRITICALNESS OF VIDEO IF CIRCUITS<br>R33, C41 and C42 were removed and L18 was grounded directly.<br>L19 was changed to part number 32-4598-27.<br>R44 was increased from 4.7KΩ to 10KΩ.<br>C43 was increased from 560MMF to 680MMF. |

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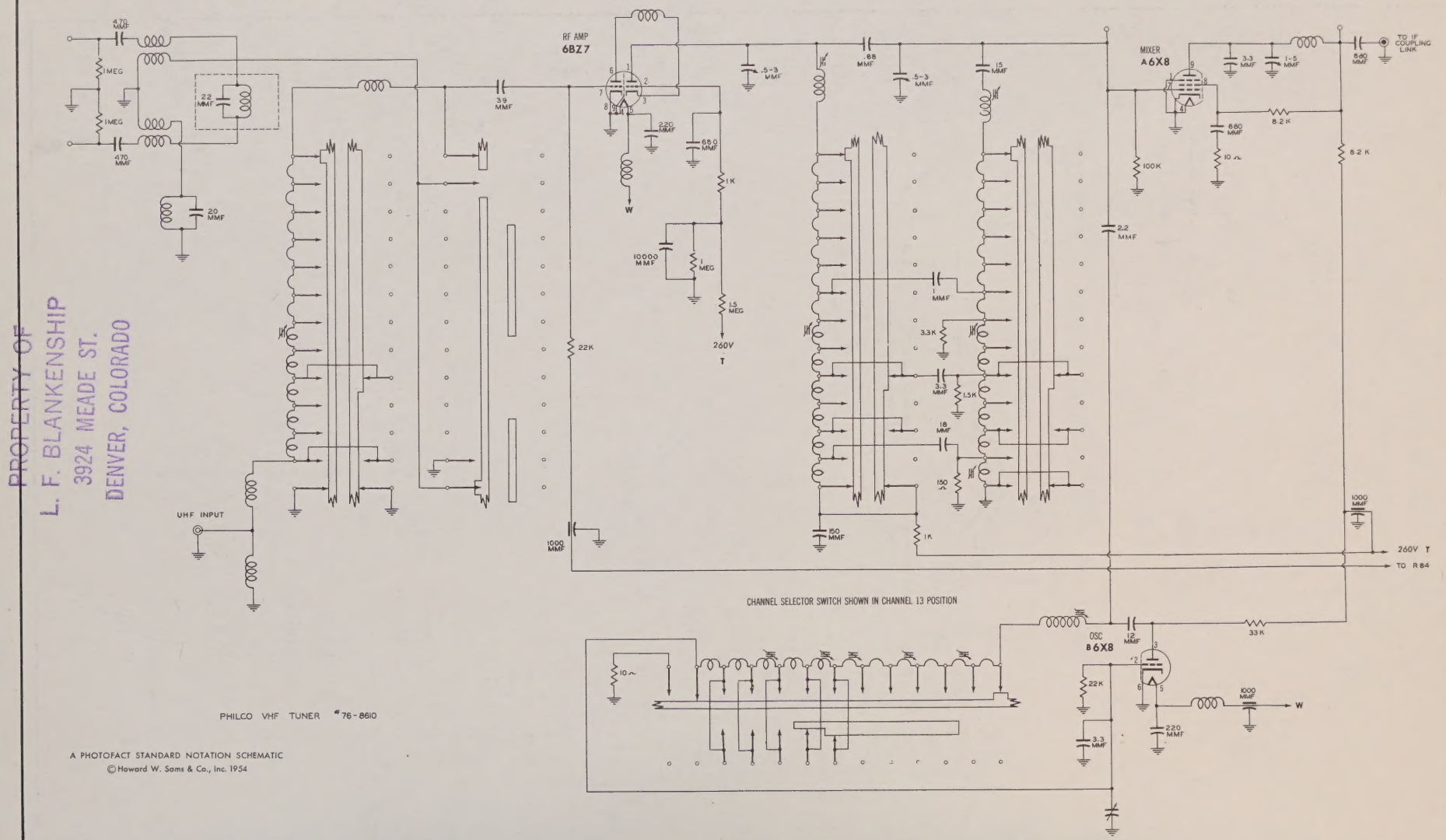
| | |
|---|---|
| Ch. R-191, U (Run 11) | TO ELIMINATE HARMONIC BEAT AND TO FACILITATE ALIGNMENT<br>A grounding clip was added to the front of the IF shield.<br>A lead was added from the junction of R72, R73, R74, C77 and C78 to lug 5 of the video test socket. |
| Ch. R-192U (Runs 8 thru 11) | Original production of Ch. R-192U was coded Run 8 and included all production changes made in Ch. R-191, U thru Run 8. Production changes made for Runs 9, 10 and 11 are identical to those made for Runs 9, 10 and 11 in Ch. R-191, U. |
| Ch. D-191 (Runs 2 & 3) | Production Changes made in Ch. D-191, Runs 2 and 3 are included in Photofact Folder 12 – Set 231. |
| Ch. D-191 (Run 4) | TO CENTER THE RANGE OF THE VERTICAL HOLD CONTROL<br>R91, in series with the vertical hold control, was increased from 220KΩ to 240KΩ, ±5%. |
| Ch. D-191 (Run 5) | TO REDUCE V18 FILAMENT VOLTAGE<br>R120 was increased from 4.7Ω to 5.6Ω. |
| Ch. D-191 (Run 6) | TO INCREASE RECTIFIER LIFE<br>The selenium rectifiers (M1 & M2) were changed to 450MA units (part number 34-8003-8). |

PHILCO MODELS 18B3002, 18B3102, L, 18B3103(Code 140)(Ch.R-191, D-191), 18BU3002, 18BU3102, L(Code 140)(Ch.R-191U, D-191), 18BU3102, L, 18BU3103(Code 141)(Ch.R-192U, D-191), 22B4002, G, L, 22B4004, 22B4102, 22B4106, 22B4109HM, 22B4150, L, 22B4302, 22B4304, 22B4306, L, 22B4307HM(Code 140)(Ch.R-191, D-191), 22BU4002, L(Code 140)(Ch.R-191U, D-191), 22BU4002, L(Code 141)(Ch.R-192U, D-191), 22BU4004(Code 140)(Ch.R-191U, D-191) 22BU4004 (Code 141)(Ch.R-192U, D-191), 22BU4102, L (Code 140)(Ch.R-191U, D-191), 22BU4102, L(Code 141)(Ch.R-192U, D-191), 22BU4106(Code 140)(Ch.R-191U, D-191), 22BU4106(Code 141)(Ch.R-192U, D-191), 22BU4109HM(Code 140)(Ch.R-191U, D-191), 22BU4109HM(Code 141)(Ch.R-192U, D-191), 22BU4150, L(Code 140)(Ch.R-191U, D-191), 22BU4150, L(Code 141)(Ch.R-192U, D-191), 22BU4302 (Code 140)(Ch.R-191U, D-191), 22BU4302(Code 141)(Ch.R-192U, D-191)22BU4304(Code 140)(Ch.R-191U, D-191), 22BU4304(Code 141)(Ch.R-192U, D-191), 22BU4306, L(Code 140)(Ch.R-191U, D-191), 22BU4306, L(Code 141)(Ch.R-192U, D-191), 22BU4307HM(Code 140)(Ch.R-191U, D-191), 22BU4307HM (Code 141)(Ch.R-192U, D-191)




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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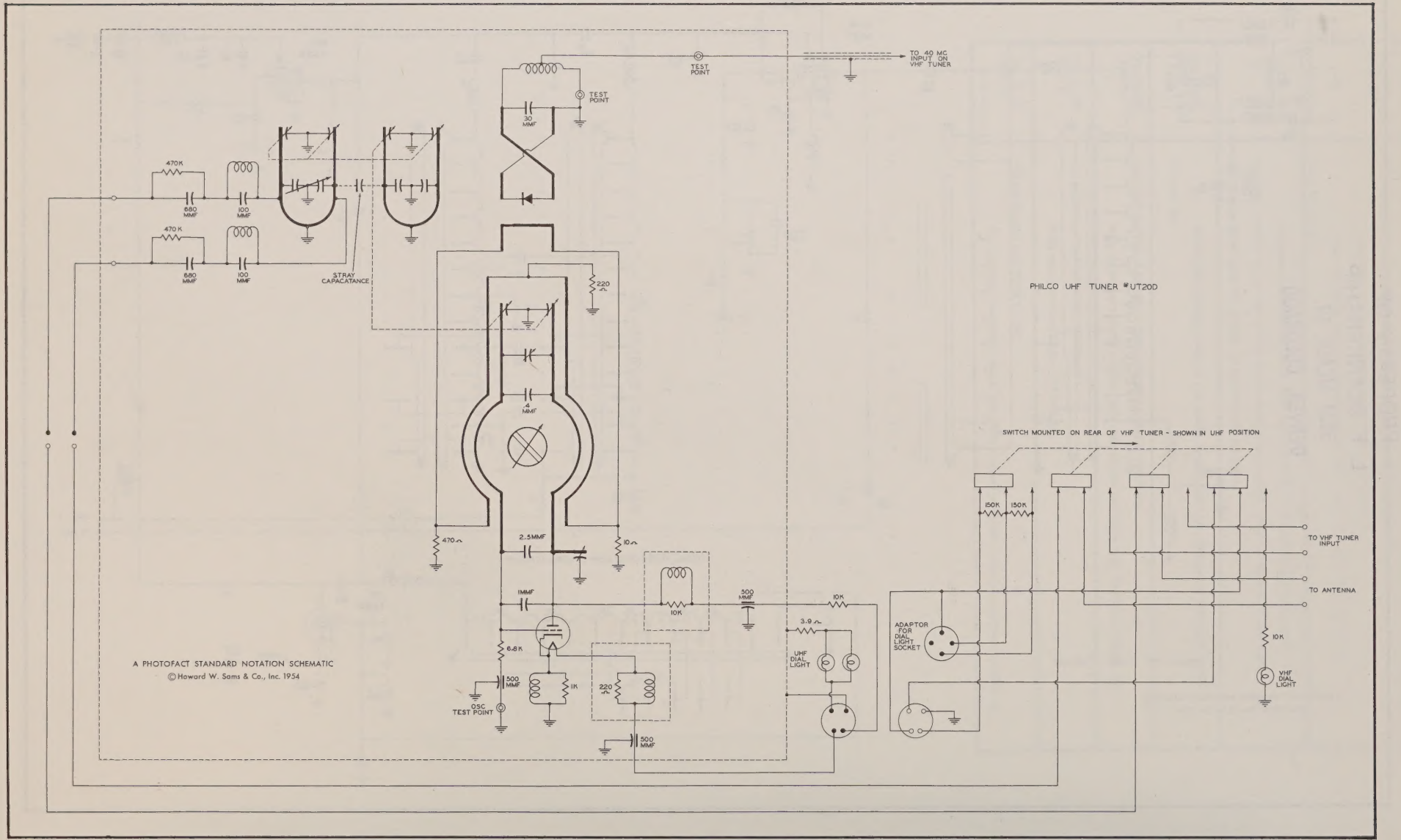
TO 40 MC INPUT ON VHF TUNER
TEST POINT
TEST POINT
30 MMF
470K
680 MMF
100 MMF
470 K
680 MMF
100 MMF
STRAY CAPACITANCE
220
4 MMF
470
2.5MMF
10
1MMF
500 MMF
10K
10K
3.9
6.8K
500 MMF
1K
220
OSC. TEST POINT
500 MMF
UHF DIAL LIGHT
ADAPTOR FOR DIAL LIGHT SOCKET
SWITCH MOUNTED ON REAR OF VHF TUNER - SHOWN IN UHF POSITION
150K
150K
TO VHF TUNER INPUT
TO ANTENNA
10K
VHF DIAL LIGHT
PHILCO UHF TUNER #UT20D
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# ADMIRAL CHASSIS 22A3, A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2

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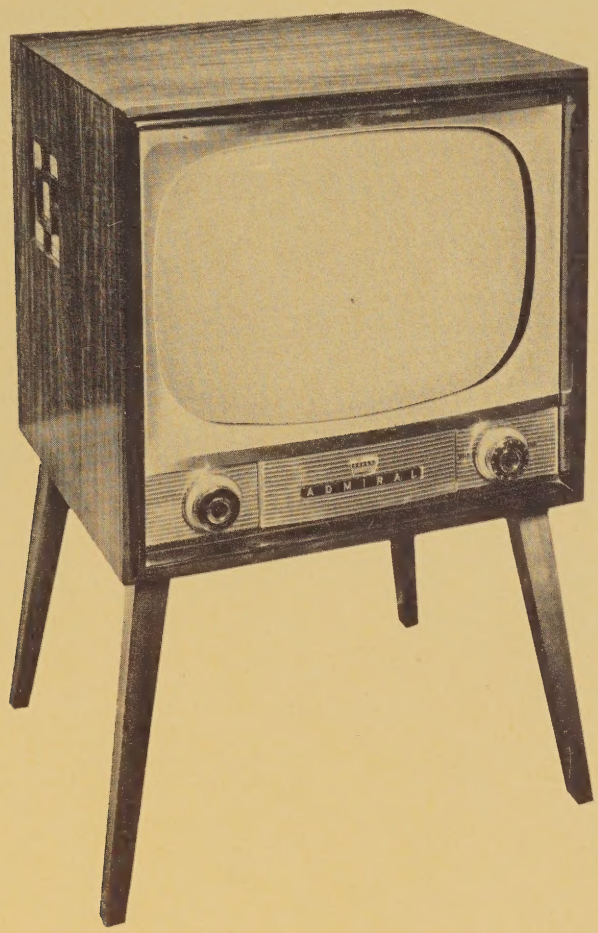
A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2




MODEL T2236Z

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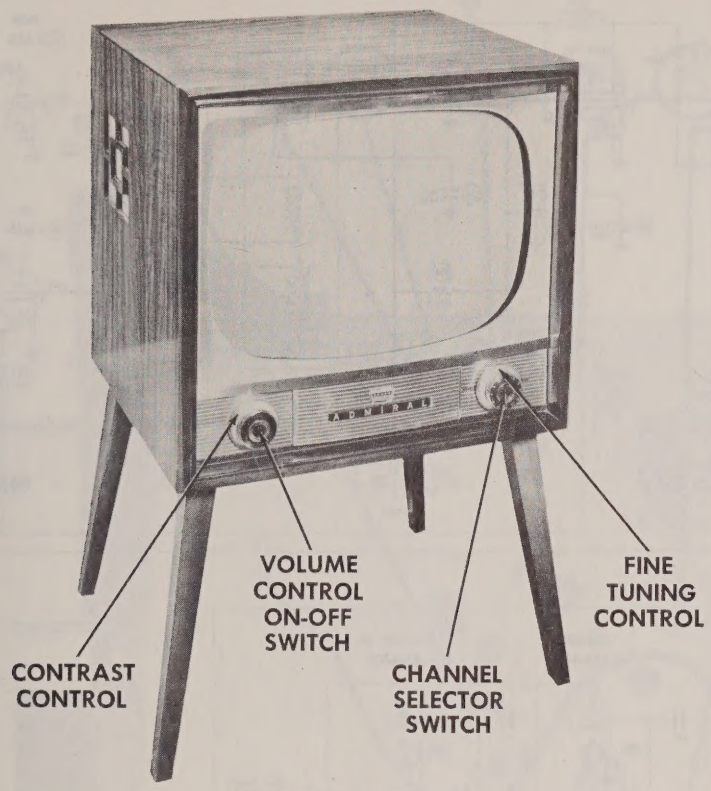


ADMIRAL MODEL T2236Z

| TRADE NAME | Admiral | MODELS | CHASSIS |
|---|---|---|---|
| | | CU2225Z, CU2226Z, CU2227Z | 22B3Z |
| | | C2225Z, C2226Z, C2227Z | 22A3Z |
| | | FU2216Z, FU2217Z, FU2218Z | 22B3Z |
| | | FU2216Z, F2217Z, F2218Z | 22A3Z |
| | | TU2232 | 22G2 |
| | | TU2232Z | 22G2Z |
| | | TU2236Z, TU2237Z | 22B2Z |
| | | T2236Z | 22A3Z or 22A3AZ |
| | | T2237Z, T2239Z | 22A3Z<br>22A3<br>22A3AZ<br>22B3AZ<br>22N2 |

| | |
|---|---|
| MANUFACTURER | Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill. |
| TYPE SET | Television Receiver |
| TUBES | Twenty-two |
| POWER SUPPLY | 110-120 Volts AC-60 Cycles RATING 1.72 Amp. @ 117 Volts AC |
| TUNING RANGE | Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 25.75MC, Sound IF 21.25MC (Intercarrier) |

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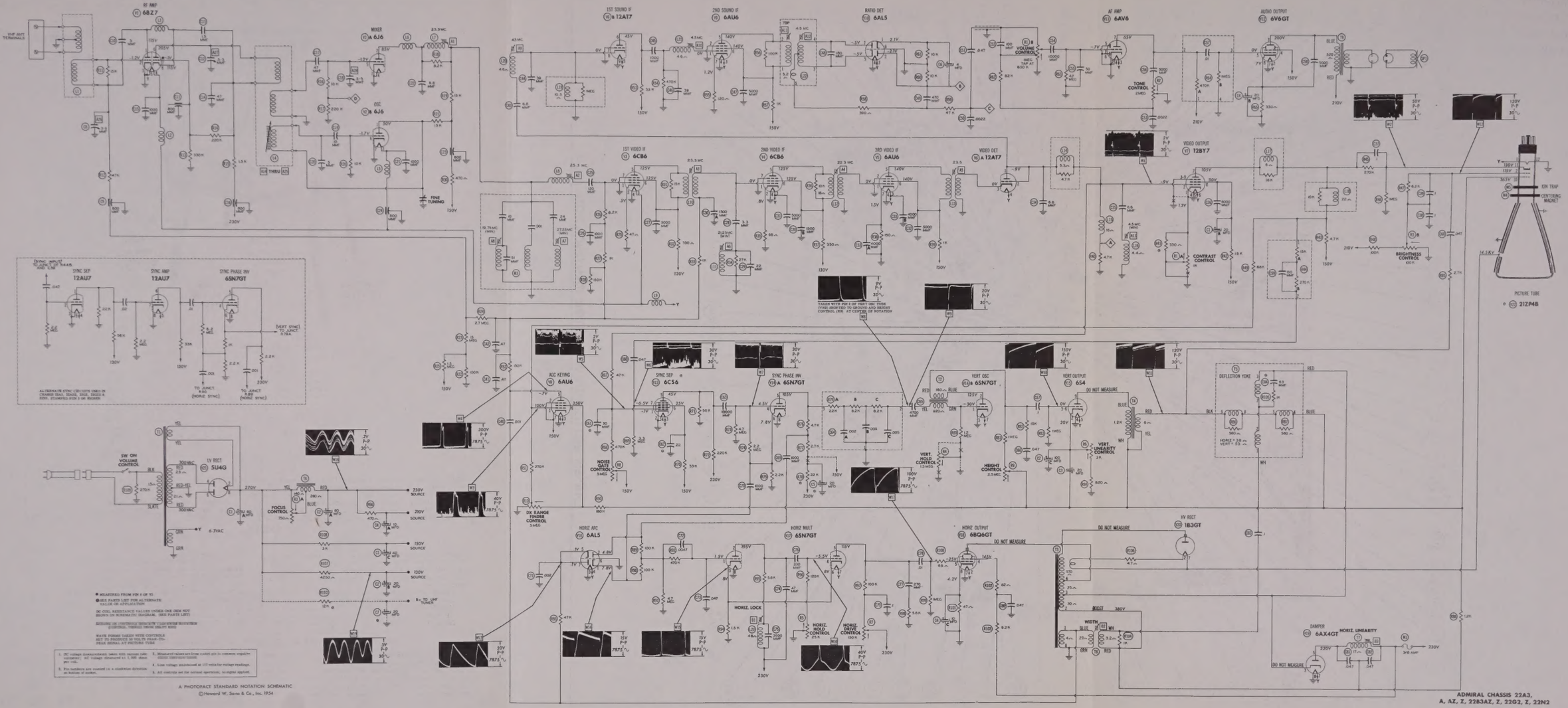


ADMIRAL
CHASSIS 22A3, A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2

ADMIRAL CHASSIS 22A3,
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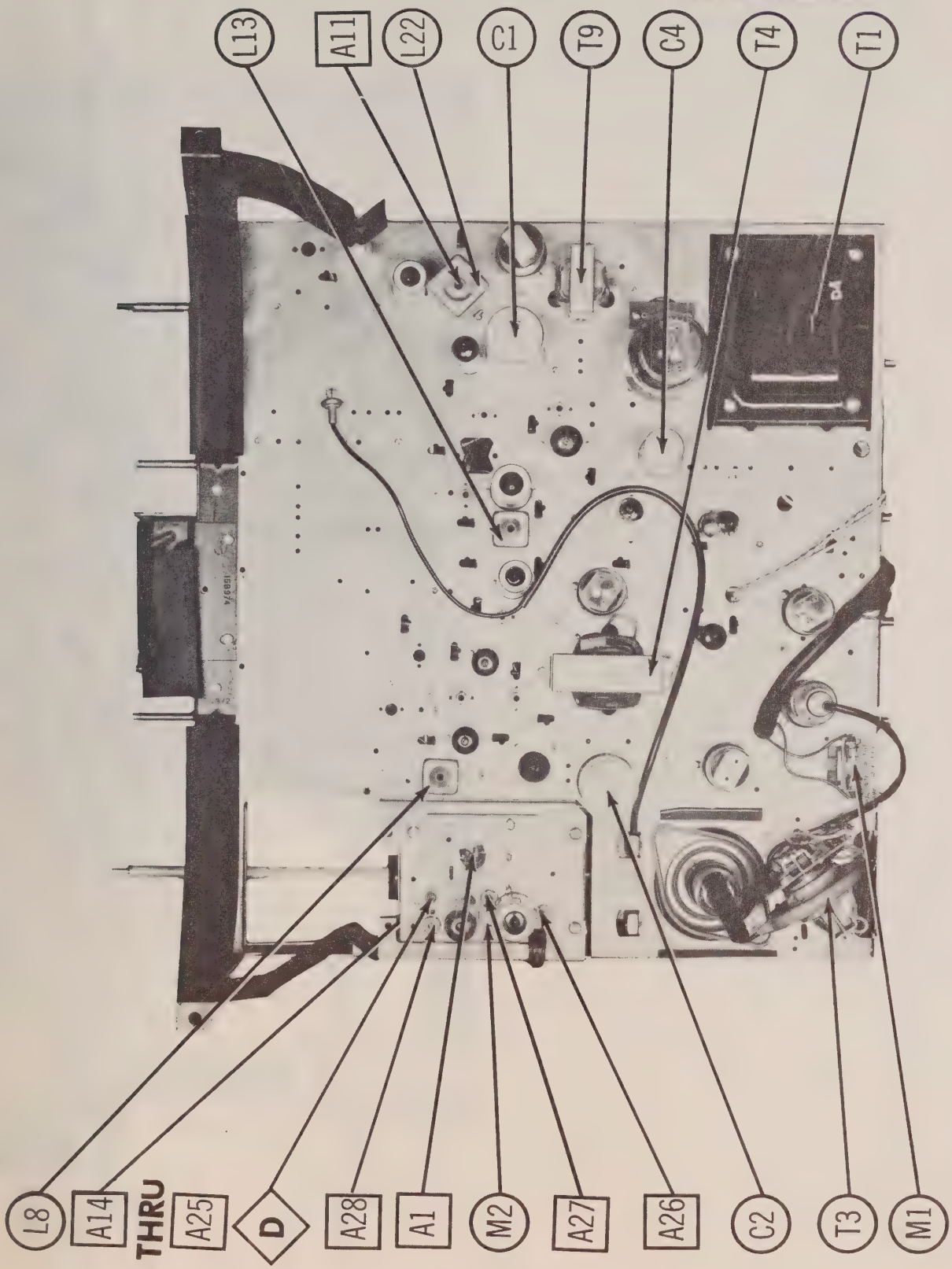
CHASSIS 22A3, A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2

CHASSIS TOP VIEW



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CHASSIS 22A3, A, AZ, Z, 22B3AZ, Z, 22G2, Z, 22N2

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

# TUBE PLACEMENT CHART

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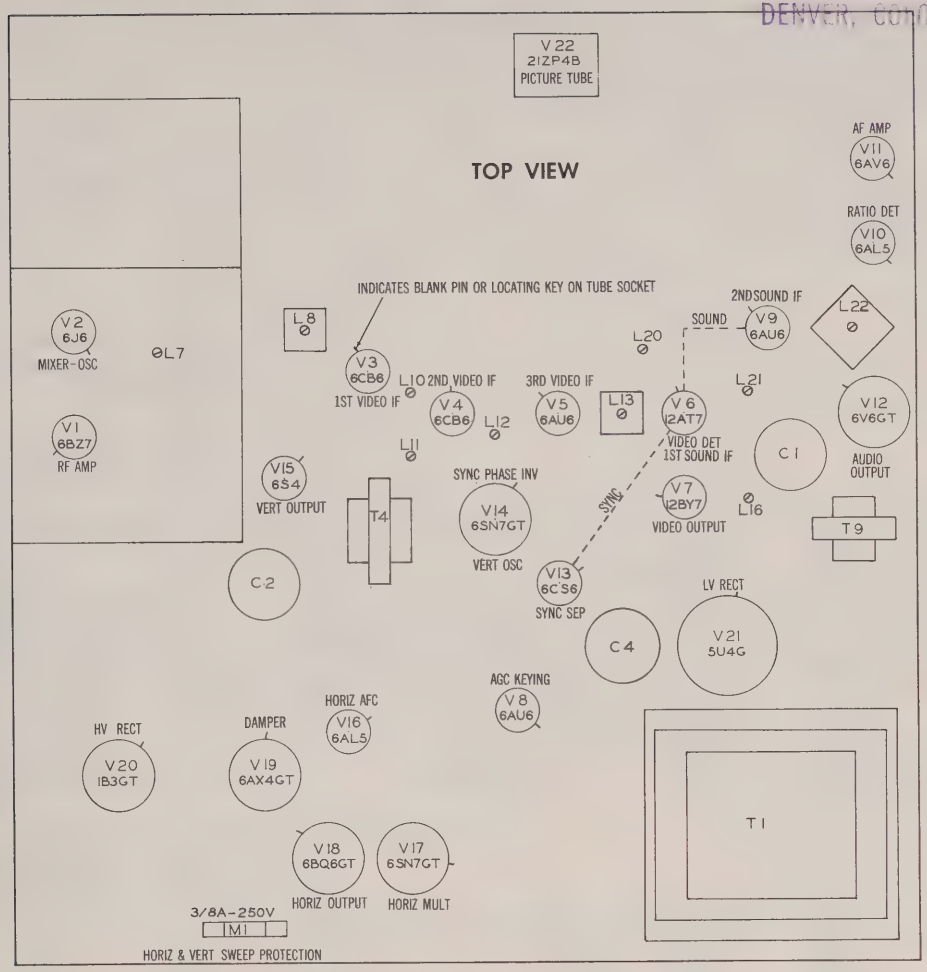



# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V22
Has pic, no sound - V6, V9, V10, V11, V12
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V14
No horiz. sync - V14, V16, V17
No vert. or horiz. sync - V13, V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V22, Fuse (M1)
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21
Vert. off freq. - V14
Horiz. off freq. - V14, V16, V17

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V17) to disable the high voltage. Allow a 15 minute warm-up period for receiver and test equipment.

**VIDEO IF ALIGNMENT**

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 4.5 volt bias supply to the ungrounded side of C42. Connect the positive lead to chassis.
Disconnect the antenna and short the antenna terminals with a short jumper wire.
Set the contrast control for minimum contrast.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 25.3MC (Unmod) | Any unused high band channel | DC probe thru decoupling filter (Fig.1) to point Ⓐ. Common to chassis. | A1, A2, A3 | Attenuate generator output to maintain not more than 1 volt at VTVM. Adjust for maximum deflection. |
| 2. | " | " | 22.3MC | " | " | A4 | " |
| 3. | " | " | 23.5MC | " | " | A5 | " |
| 4. | " | " | 21.25MC | " | " | A6 | Adjust for MINIMUM deflection. |
| 5. | " | " | 27.25MC | " | " | A7 | Reduce bias from 4.5 volts to 1.5 volts. Adjust for MINIMUM deflection. |
| 6. | " | " | 19.75MC | " | " | A8 | " |
| 7. | " | " | 25.3MC | " | " | | Increase bias to 4.5 volts. Retouch A1, A2 and A3 for maximum deflection. |

**OVERALL VIDEO IF RESPONSE CHECK**

Connect 4.5 volt bias battery as under "Video IF Alignment". Set contrast control for minimum contrast.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 24MC (10MC Swp) | 21.25MC<br>22.0MC<br>24.3MC<br>25.0MC<br>25.75MC | Any Unused High Band Channel | Vert. Amp. thru decoupling filter (Fig.1) to point Ⓐ. Low side to chassis | | Use only enough sweep generator output to provide usable pattern on scope. Check for response curve similar to Fig. 2. If necessary, retouch A1 thru A5 to obtain desired response. |

**SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM**

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 9. | .01MFD | High side to pin 1 (plate) of 12AT7 (V6A). Low side to chassis. | 4.5MC (Unmod) | Any | DC probe to point Ⓑ. Common to chassis. | A9, A10, A11 | Attenuate generator output to maintain 1 volt at VTVM. Adjust for maximum deflection. |
| 10. | " | " | " | " | DC probe to point Ⓒ. Common to chassis. | A12 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Final adjustment of A12 may be made by tuning in a TV station and adjusting A12 for clearest sound and minimum buzz. |

**SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE**

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 9. | .01MFD | High side to pin 1 (plate) of 12AT7 (V6A). Low side to chassis. | 4.5MC (450KC Swp) | 4.5MC | Any | Vert. Amp. to point Ⓑ. Low side to chassis. | A9, A10, A11 | Disconnect stabilizing capacitor C6. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3. |
| 10. | " | " | " | " | " | Vert. Amp. to point Ⓒ. Low side to chassis. | A12 | Reconnect stabilizing capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines. |

**4.5MC TRAP ALIGNMENT**

Connect a 10MFD capacitor from the plate of the video amplifier (V7) to the cathode of the first sound IF amplifier (V6B).

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 11. | .01MFD | High side to pin 1 (plate) of 12AT7 (V6A) Low side to chassis. | 4.5MC (Unmod) | Any | DC probe to point Ⓑ. Common to chassis. | A13 | Adjust for MINIMUM deflection. Remove 10MFD capacitor from plate of V7 to cathode of V6B. |

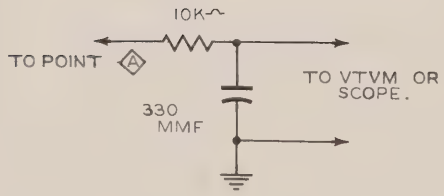


FIG.1

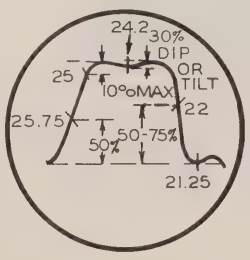


FIG. 2

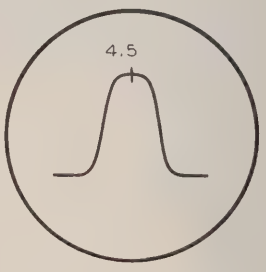


FIG. 3

# ALIGNMENT INSTRUCTIONS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3124 MEADE ST
DENVER, COLORADO

ALTERNATE 4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust A13 for minimum 4.5MC beat interference in the picture.

VHF OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Leave the bias battery connected as under "Overall Video IF Response Check".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 12. | Two 120Ω Carbon Resistors | Across antenna terminals with 120Ω in each lead. | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | Vert. Amp. thru decoupling filter (Fig 1) to point (A). Low side to chassis. | A14 | Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%. |
| | | | 207MC (10MC Swp) | 205.25MC 209.75MC | 12 | | A15 | |
| | | | 201MC (10MC Swp) | 199.25MC 203.75MC | 11 | | A16 | |
| | | | 195MC (10MC Swp) | 193.25MC 197.75MC | 10 | | A17 | |
| | | | 189MC (10MC Swp) | 187.25MC 191.75MC | 9 | | A18 | |
| | | | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | | A19 | |
| | | | 177MC (10MC Swp) | 175.25MC 179.75MC | 7 | | A20 | |
| | | | 85MC (10MC Swp) | 83.25MC 87.75MC | 6 | | A21 | |
| | | | 79MC (10MC Swp) | 77.25MC 81.75MC | 5 | | A22 | |
| | | | 69MC (10MC Swp) | 67.25MC 71.75MC | 4 | | A23 | |
| | | | 63MC (10MC Swp) | 61.25MC 65.75MC | 3 | | A24 | |
| | | | 57MC (10MC Swp) | 55.25MC 59.75MC | 2 | | A25 | |

VHF RF AND MIXER ALIGNMENT

Leave the bias battery connected as under "Overall Video IF Response Check". If a usable indication cannot be obtained on the scope, remove the bias battery and short the ungrounded side of C42 to chassis with a short jumper.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 13 | Two 120Ω carbon resistors | Across antenna terminals with 120Ω in each lead | 195MC (10MC Swp) | 193.25MC 197.75MC | 10 | Vert. amp. thru 10KΩ to point (D). Low side to tuner chassis. | A26, A27, A28 | Adjust for response curve similar to Fig 6 with markers above 90% |
| 14 | " | " | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | " | | Check for response similar to Fig 6 if markers fall below 70% on any channel. Make compromise adjustments of A26, A27 and A28 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected. |
| | | | 207MC (10MC Swp) | 205.25MC 209.75MC | 12 | | | |
| | | | 201MC (10MC Swp) | 199.25MC 203.75MC | 11 | | | |
| | | | 189MC (10MC Swp) | 187.25MC 191.75MC | 9 | | | |
| | | | 183MC (10MC Swp) | 181.25MC 185.75Mc | 8 | | | |
| | | | 177MC (10MC Swp) | 175.25MC 179.75MC | 7 | | | |
| | | | 85MC (10MC Swp) | 83.25MC 87.75MC | 6 | | | |
| | | | 79MC (10MC Swp) | 77.25MC 81.75Mc | 5 | | | |
| | | | 69MC (10MC Swp) | 67.25MC 71.75MC | 4 | | | |
| | | | 63MC (10Mc Swp) | 61.25MC 65.75MC | 3 | | | |
| | | | 57MC (10MC Swp) | 55.25MC 59.75MC | 2 | | | |

UHF TUNER ALIGNMENT

The UHF tuner portion of this receiver has been properly aligned at factory and is very stable. If major repair or alignment of the UHF tuner becomes necessary the entire UHF tuner should be returned to the factory service department.

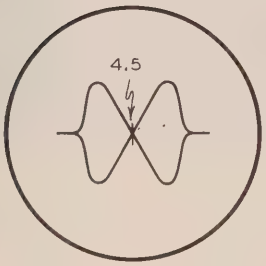


FIG. 4

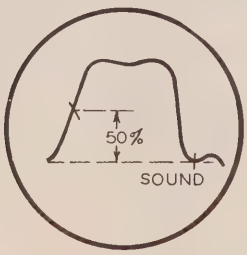


FIG. 5

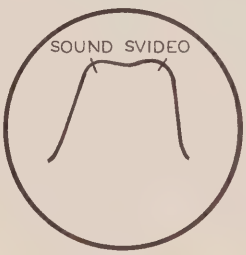
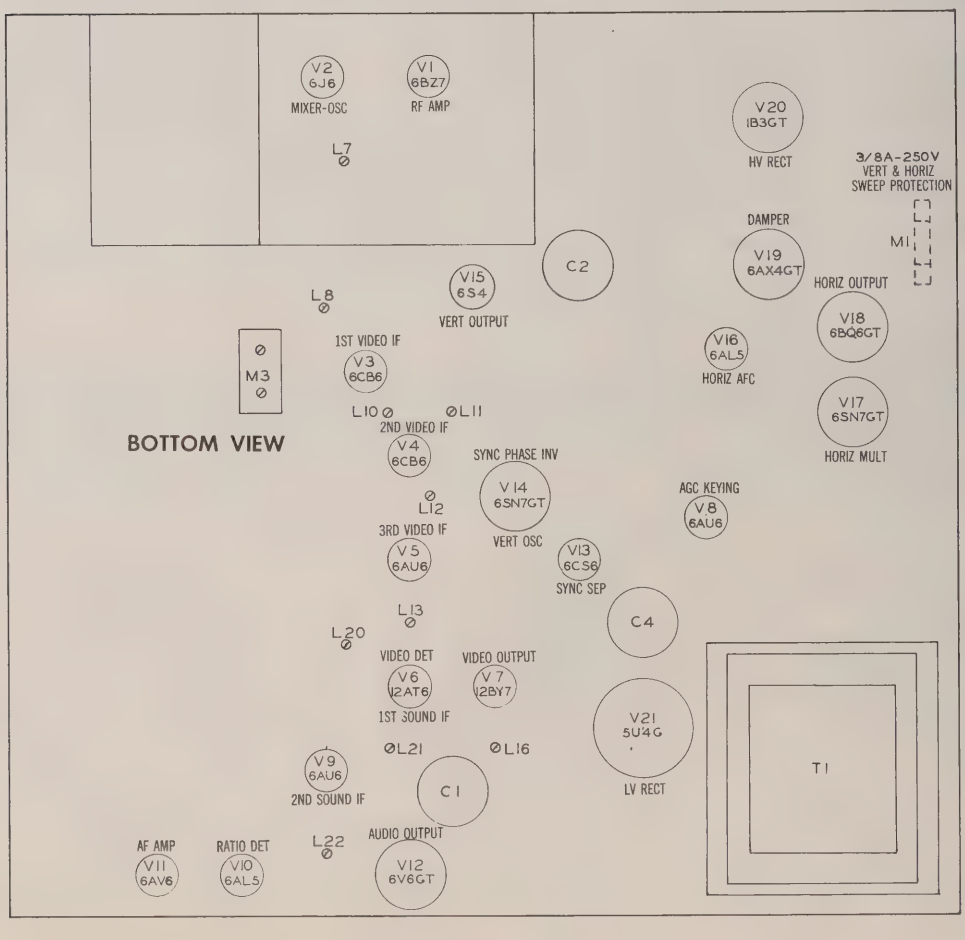


FIG. 6

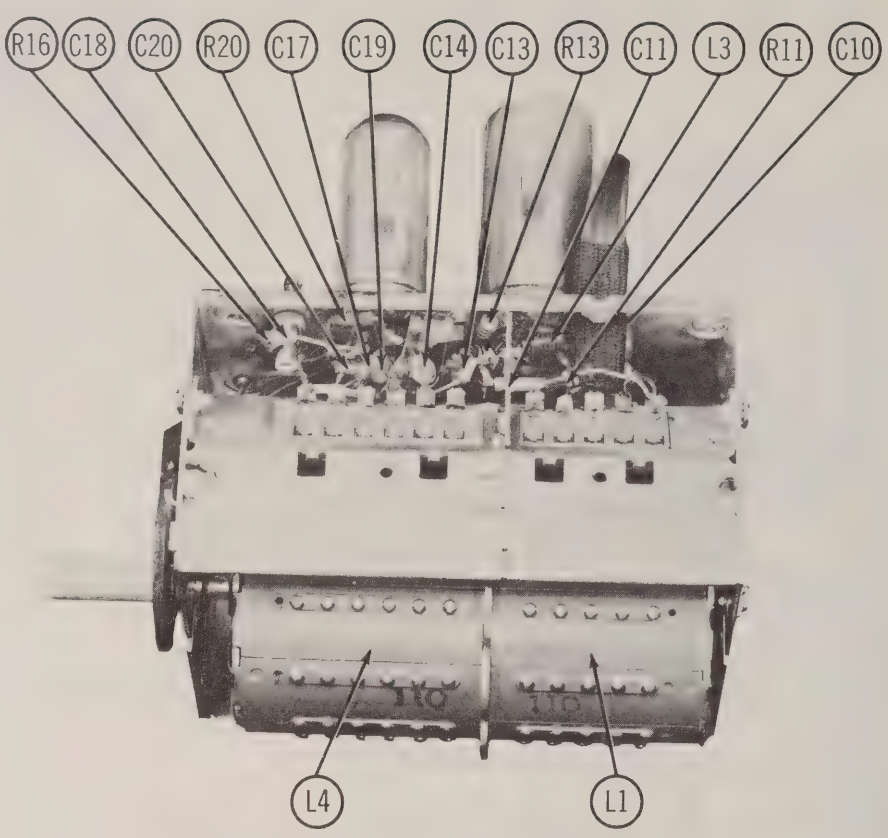
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BZ7 | INF | 3Meg | 0Ω | .1Ω | 0Ω | †1.8KΩ | 130KΩ | INF | 0Ω |
| V 2 | 6J6 | †18KΩ | †18.5KΩ | .1Ω | 0Ω | 230KΩ | 10KΩ | 0Ω | | |
| V 3 | 6CB6 | 180KΩ | 47Ω | .1Ω | 0Ω | †4.6KΩ | †4.6KΩ | 0Ω | | |
| V 4 | 6CB6 | 180KΩ | 68Ω | .1Ω | 0Ω | †4.6KΩ | †4.6KΩ | 0Ω | | |
| V 5 | 6AU6 | .4Ω | 0Ω | .1Ω | 0Ω | †4KΩ | †4KΩ | 150Ω | | |
| V 6 | 12AT7 | 4.7KΩ | 4.7KΩ | .3Ω | .1Ω | .1Ω | †36KΩ | 0Ω | 10.5Ω | 0Ω |
| V 7 | 12BY7 | 140Ω | 4.7KΩ | 0Ω | 0Ω | 0Ω | .1Ω | †7.7KΩ | †21KΩ | 0Ω |
| V 8 | 6AU6 | †16KΩ | †3KΩ | .1Ω | 0Ω | 150KΩ | †350KΩ | †3KΩ | | |
| V 9 | 6AU6 | 470KΩ | 0Ω | .1Ω | 0Ω | †4KΩ | †4KΩ | 120Ω | | |
| V 10 | 6AL5 | 10KΩ | 10KΩ | .1Ω | 0Ω | INF | 0Ω | INF | | |
| V 11 | 6AV6 | 4.7Meg | 0Ω | .1Ω | 0Ω | 0Ω | 0Ω | †470KΩ | | |
| V 12 | 6V6GT | INF | .1Ω | †1.3KΩ | †3KΩ | 1Meg | †800Ω | 0Ω | 330Ω | |
| V 13 | 6CS6 | 50KΩ | 0Ω | 0Ω | .1Ω | †80KΩ | †40KΩ | 3.3Meg | | |
| V 14 | 6SN7GT | 2.3Meg | ▲2.5Meg | 0Ω | 1.7Meg | †35KΩ | 2.2KΩ | .1Ω | 0Ω | |
| V 15 | 6S4 | INF | 1.8KΩ | 1Meg | 0Ω | .1Ω | 1Meg | INF | INF | ▲2.5KΩ |
| V 16 | 6AL5 | 4.8Meg | 4.8Meg | 0Ω | .1Ω | 47KΩ | 0Ω | 47KΩ | | |
| V 17 | 6SN7GT | 5.2Meg | †6KΩ | 1.5KΩ | 140KΩ | †200KΩ | 1.5KΩ | .1Ω | 0Ω | |
| V 18 | 6BQ6GT | †8.5KΩ | .1Ω | INF | †8.5KΩ | 1Meg | 1Meg | 0Ω | 47Ω | TOP CAP ▲25Ω |
| V 19 | 6AX4GT | †350KΩ | INF | 700KΩ | INF | †370Ω | ▲4.5KΩ | .1Ω | 0Ω | |
| V 20 | 1B3GT | | PINS | 1 - 8 | HAVE | INF | RESISTANCE | | | TOP CAP ▲595Ω |
| V 21 | 5U4G | INF | 50KΩ | †3KΩ | 23Ω | INF | 21Ω | INF | 50KΩ | |
| V 22 | 21ZP4B | .1Ω | †80KΩ | PIN 10 ▲1.2KΩ | PIN 11 †250KΩ | PIN 12 0Ω | | | | |

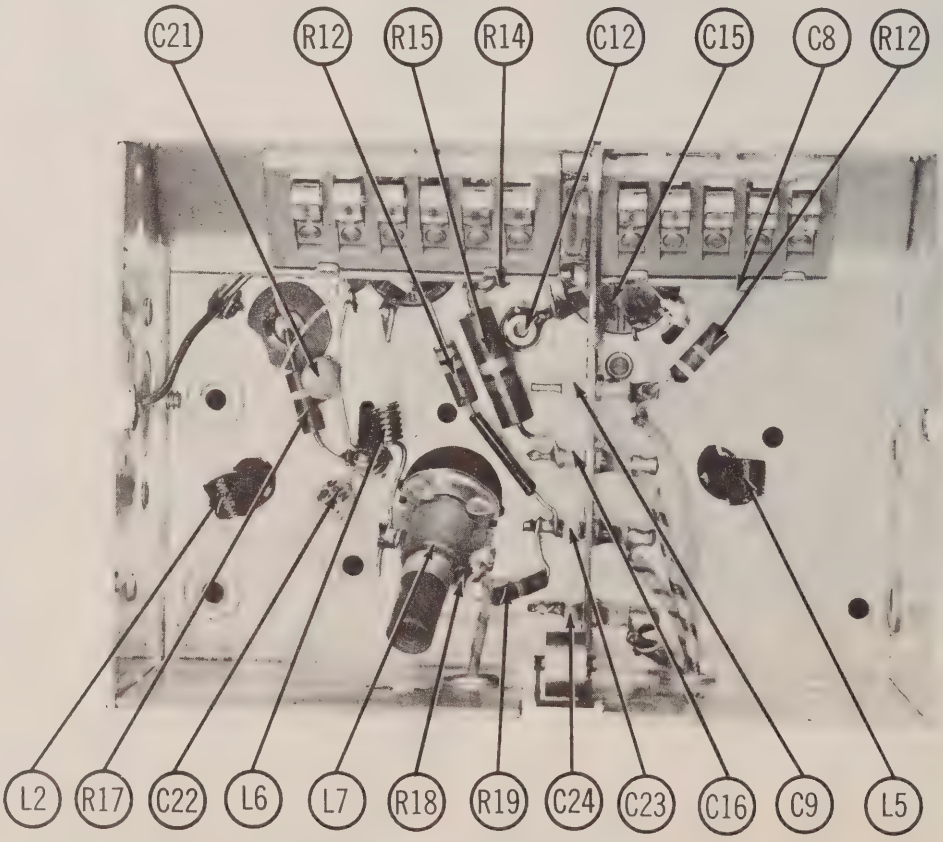
† MEASURED FROM PIN 8 OF V21
▲ MEASURED FROM PIN 3 OF V19



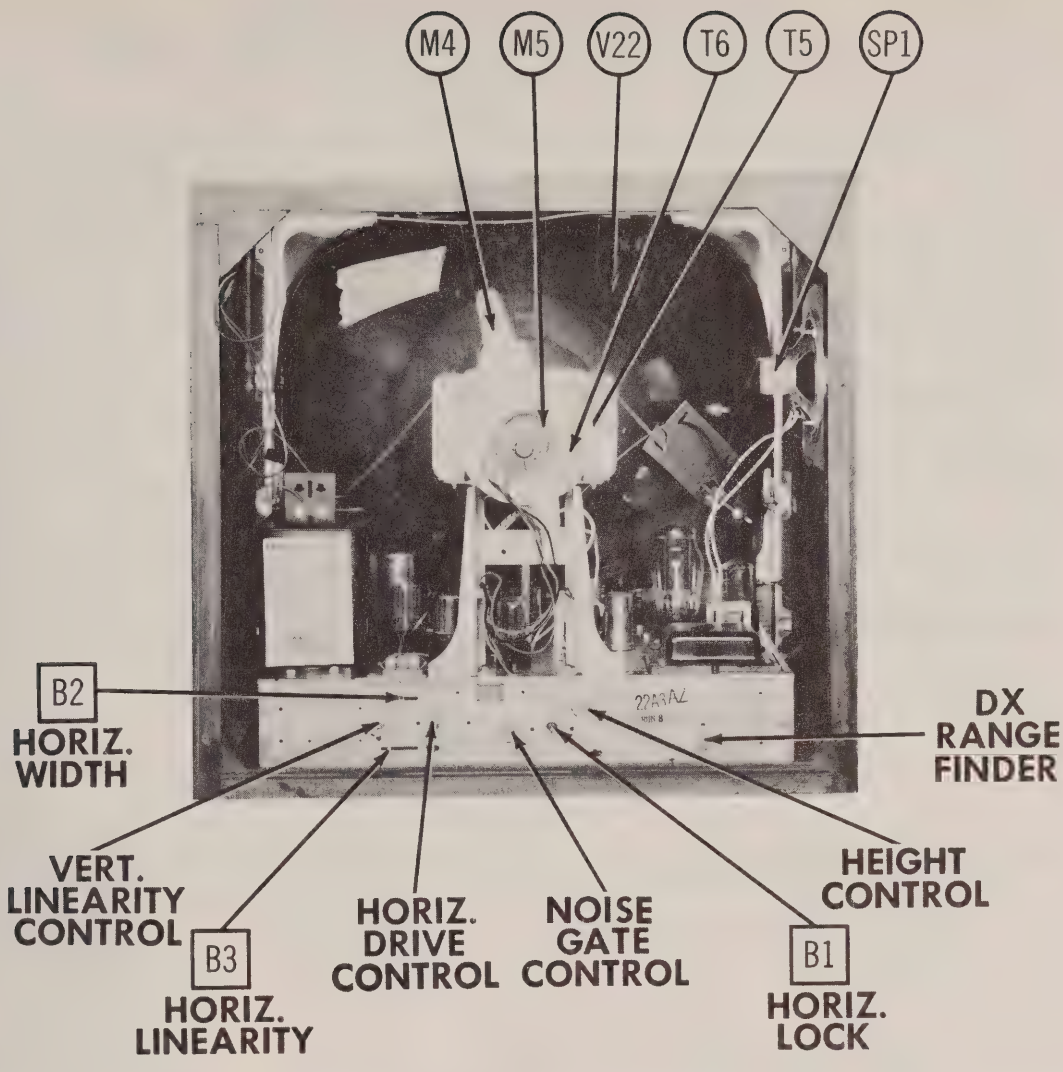

# TUBE PLACEMENT CHART




**RF TUNER-RIGHT SIDE**




**RF TUNER-BOTTOM VIEW**




## CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably a test pattern. Set the DX range finder control as near the "zero" position as possible consistent with satisfactory pictures.
2. Set the brightness control below average setting. Turn contrast control and horizontal hold control fully counter clockwise.
3. Turn the horizontal drive control fully clockwise.
4. Turn the horizontal lock slug (B1) clockwise until the picture loses sync. It may be necessary to switch off channel, then back again for picture to lose sync.
5. Turn B1 slowly counter clockwise until picture just falls into sync.
6. Switch to an unused channel. If vertical white line (S) appear near the center of screen slowly rotate the horizontal drive control counter clockwise until the white line (S) just disappear.
7. If in step 6 the horizontal drive control was readjusted tune in a station and repeat steps 4 and 5.
8. To check for satisfactory operation slowly rotate the horizontal hold control in either direction while interrupting the signal by switching off channel, then back. The picture should fall into sync thru at least half the range of the horizontal hold control.
9. Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.
10. Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

# TROUBLE SHOOTING AIDS

## SWEEP

### HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V18 and V19. Check adjustments R7, B2 and B3. Check T3, T5A, R103, R101, C4C, C80 and other associated components.

DRIVE LINES

Check by substitution V18 and V19. Check adjustments R7 and B3. Check C78, C76, R103 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V18 and V19. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V17, V18 and V19. Check C73 for open. Check T3, T5A and other associated components.

XMAS TREE EFFECT

Check by substitution V17, V18 and V19. Check T3 and T5A for internal arcing. Check L23, C75, C76, C74, R95, R97 and other associated components.

### VERTICAL

LOSS OF SWEEP

Check by substitution V14 and V15. Check waveform W10.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T4, T5B, R88, R84, R6, C68 C2C and other associated components. | Check T2, R81, R9, C67, C65 and other associated components. |

INSUFFICIENT SWEEP

Check by substitution V14 and V15. Check height and vertical linearity controls for proper operation. Check T3 and T5B.

COMPRESSED AT BOTTOM

Check by substitution V14 and V15. Check C67, R9, R81, T2 and other associated components.

COMPRESSED AT TOP

Check by substitution V14 and V15. Check R6, R84, C2C, C3, T4, T5B and other associated components.

FOLDS

Check by substitution V14 and V15. Check C66, R82, T4, T5A and other associated components.

## SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V13 and V14. Check C60, C63, C62, R72, R78, R77, R76 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V14. Check waveform W8.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T2, R4, R80, C65 and other associated components. | Check vertical integrator network. Check video IF for overloading. |

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V16 and V17. Check C69, C70, C71, C76 R89, R90, R96 and other associated components.

HORIZONTAL BENDING

Check by substitution V8, V9, V13, V14 and V16. Check horizontal AFC network.

## VIDEO

LOSS OF VIDEO

Substitute V7. Check R42, R43, C37, C36, C1B and other associated components.

SOUND BARS(4.5 MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A13. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check L17, C37, R45, contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Substitute V7. Check video detector network. Check picture tube, R43 and other associated components.

SMEAR

Substitute V7. Check L14, L15, L17, L18, C37 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6 and V7 for heater to cathode leakage.

## AUDIO

WEAK OR NO SOUND

Check by substitution V6, V9, V10, V11 and V12. Check stages V11 and V12 using audio signal generator. Apply audio signal across R1B.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check ratio detector and audio IF stages for component failure or change of value. | Check C54, C57, C58, R66, R64A, R65, T9, speaker and other associated components. |

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A12 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

## POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V21. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Substitute V21. Check B+ filter and decoupling network.

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
L F BLANKENSHIP
3927 MEADE ST.
DENVER, COLORADO

| ITEM No. | USE | REPLACEMENT DATA: ADMIRAL PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amplifier | 6BZ7 | 6BZ7 | 9AJ | |
| V2 | Mixer - Osc. | 6J6 | 6J6 | 7BF | |
| V3 | 1st. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V4 | 2nd. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V5 | 3rd. Video IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V6 | Video Detector-1st. Sound IF Amp. | 12AT7 | 12AT7 | 9A | |
| V7 | Video Output | 12BY7 | 12BY7 | 9BF | |
| V8 | AGC Keying | 6AU6 | 6AU6 | 7BK | |
| V9 | 2nd. Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V10 | Ratio Detector | 6AL5 | 6AL5 | 6BT | |
| V11 | AF Amplifier | 6AV6 | 6AV6 | 7BT | |
| V12 | Audio Output | 6V6GT | 6V6GT | 7S | |
| V13 | Sync Separator | 6CS6 | 6CS6 | 7CH | In Ch. 22A3, 22A3Z, 22G2, 22G2Z, & 22N2 uses a 12AU7. |
| V14 | Sync Phase Inv-Vert. Oscillator | 6SN7GT | 6SN7GT | 8BD | |
| V15 | Vert. Output | 6S4 | 6S4 | 9AC | |
| V16 | Horiz. AFC | 6AL5 | 6AL5 | 6BT | |
| V17 | Horiz. Mult. | 6SN7GT | 6SN7GT | 8BD | |
| V18 | Horiz. Output | 6BQ6GT | 6BQ6GT | 6AM | |
| V19 | Damper | 6AX4GT | 6AX4GT | 4CG | |
| V20 | HV Rectifier | 1B3GT | 1B3GT | 3C | |
| V21 | LV Rectifier | 5U4G | 5U4G | 5T | |

## CATHODE-RAY TUBE

| ITEM No. | REPLACEMENT DATA: ADMIRAL PART No. | CBS-HYTRON PART No. | GENERAL ELECTRIC PART No. | SYLVANIA PART No. | WESTINGHOUSE PART No. | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|---|---|
| V22 | 21ZP4B | 21ZP4B | 21ZP4B | 21ZP4B | 21ZP4B | 12N | ① Circuit changes necessary |
| | 21ZP4A | 21ZP4A | 21ZP4A | 21ZP4A | 21ZP4A | 12N | |
| | | | | 21ZP4 ① | | 12D | |
| | 21EP4A | 21EP4A | 21EP4A | 21EP4A | 21EP4A | 12N | |
| | | 21EP4B | | | 21EP4B | 12N | |
| | | | | 21EP4 ① | | 12D | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: ADMIRAL PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ▲60 | 450 | 67C15-27 | AFH4-93 | | C168 | | FP375.6 | TVL-2770 | |
| B | ▲20 | 350 | | | | | | | TVA-1608 | |
| C | ■40 | 350 | | | | | | | | |
| C2A | ▲80 | 400 | 67C15-28 | AFH4-87 | | C164 | | FP368.3 | TVL-3757 | |
| B | ■20 | 350 | | | | | | | | |
| C | ▲100 | 50 | | | | | | | | |
| C3 | 20 | 475 | 67A25-1 | PRS500/8 | | BR2050 | | TC83 | TVA-1804 | |
| C4A | ■10 | 450 | 67C15-19 | AFH3-125 | | C166 | | FP345.2 | TVL-3719 | |
| B | ▲20 | 25 | | | | | | | | |
| C | 10 | 25 | | | | | | | | |
| C5 | 20 | 475 | 67A25-1 | PRS500/20 | | BR2050 | | TC83 | TVA-1804 | Note 1 |
| C6 | 4 | 50 | 67A4-9 | PRS150/4 | | BR550 | | TC30 | TVA-1303 | |
| C7 | 20 | 475 | 67A25-1 | PRS500/20 | | BR2050 | | TC83 | TVA-1804 | Note 2 |
| C8 | 3-9 | | 98A45-96 | | 829-10 | | | | | |
| C9 | 800 | | 94C37-90 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C10 | 3 | | 94D47-54 | SI3NP0 | TCZ-3 | Z007 | NP0K-030 | ZT-5533 | 5TCCB-V33 | |
| C11 | 800 | | 94C37-90 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C12 | .5-3 | | 98A45-23 | | 829-3 | | 3115-01-0R5 | CT565A | | |
| C13 | 1.5 | | | SI1.5NP0 | TCZ-1.5 | Z004 | NP0K-1R5 | ZT-5515 | 5TCCB-V15 | |
| C14 | 47 | | 94D47-50 | BPD-000047 | D6-470 | G033 | 801-470 | UC-5447 | 5GA-Q47 | |
| C15 | 1000 | | 98A45-24 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C16 | 800 | | 94C37-90 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C17 | 47 | | 94D47-50 | BPD-000047 | D6-470 | G033 | 801-470 | UC-5447 | 5GA-Q47 | |
| C18 | .5-3 | | 98A45-23 | | 829-3 | | 3115-01-0R5 | CT565A | | |
| C19 | 10 | | 94D47-51 | SI10NP0 | TCZ-10 | Z018 | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C20 | 5 | | 94D47-52 | | | | | | | |
| C21 | 1000 | | | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C22 | 6.8 | | 94D47-53 | SI6.8NP0 | TCZ-6.8 | Z013 | NP0K-6R8 | ZT-5568 | 5TCCB-V68 | |
| C23 | 800 | | 94C37-90 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C24 | 800 | | 94C37-90 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C25 | 120 | | 65B1-10 | SI120 | D6-121 | TP35 | GP2K-121 | UC-5312 | 5GA-T12 | |
| C26 | 1000 | | | SI1000 | D6-102 | TP52 | GP2L-102 | UC-521 | 5HK-D1 | |
| C27 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C28 | 3.3 | | | SI3.3NP0 | TCZ-3.3 | Z008 | NP0K-3R3 | ZT-5533 | 5TCCB-V33 | |
| C29 | 22 | | | SI22NP0 | TCZ-22 | TZ14 | NP0K-220 | ZT-5422 | 5TCC-Q22 | |
| C30A | 1500 | | | BPD-2X0015 | DD2-152 | DK071 | 812-0015 | DCD-5215 | 5HK-D15 | |
| B | 1500 | | | | | | | | | |
| C31 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C32 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C33A | 4000 | | | BPD-2X004 | D6-402 | DK078 | 822-004 | DCD-524 | 5HK-2D4 | |
| B | 4000 | | | | D6-402 | | | | | |
| C34 | 6.8 | | | SI6.8NP0 | TCZ-6.8 | TZ08 | NP0K-6R8 | ZT-5568 | 5TCCB-V68 | |
| C35 | 6.8 | | 65C6-71 | SI6.8NP0 | TCZ-6.8 | Z013 | NP0K-6R8 | ZT-5568 | 5TCCB-V68 | |
| C36 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C37 | .1 | 400 | | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C38 | .1 | 400 | | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C39 | .1 | 400 | | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C40 | .001 | 600 | | P688-001 | D6-102 | CUB6D1 | GP2L-102 | PT621 | 6TM-D1 | |
| C41 | .47 | 100 | | P288-47 | | CUB2P47 | | PT4047 | 2TM-P47 | |
| C42 | .47 | 100 | | P288-47 | | CUB2P47 | | PT4047 | 2TM-P47 | |
| C43 | 6.8 | | 65C6-71 | SI6.8NP0 | TCZ-6.8 | Z013 | NP0K-6R8 | ZT-5568 | 5TCCB-V68 | |
| C44 | 39 | | | SI39NP0 | TCZ-39 | TZ20 | NP0K-390 | ZT-5439 | 5TCC-Q39 | |
| C45 | 1000 | | | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C46 | 39 | | | SI39NP0 | TCZ-39 | TZ20 | NP0K-390 | ZT-5439 | 5TCC-Q39 | |
| C47 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C48 | 180 | | 65C6-59 | | | | | | | |
| C49 | 470 | 500 | | 1469-0005 | | 5R5T47 | | MCB245 | MS-35 | |
| C50 | .0022 | 600 | | P688-0022 | D6-222 | CUB6D22 | GP2-333-222 | PT622 | 6TM-D22 | |
| C51 | .047 | 200 | | P288-047 | DF-503 | CUB2S47 | | PT4147 | 4TM-S47 | |
| C52 | 100 | | | SI100 | D6-101 | TP34 | GP1K-101 | UC-531 | 5GA-T1 | |

PROPERTY OF
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3924 MEADE ST



# PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS (cont)

| ITEM No. | RATING CAP. | RATING VOLT | REPLACEMENT DATA ADMIRAL PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C53 | .0022 | 600 | | P688-0022 | DS-222 | CUB8D22 | GP2-333-222 | PT6222 | 6TM-D22 | |
| C54 | 10000 | | | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-81 | |
| C55 | 50 | | | SI50 | DS-500 | TP50 | GP1K-500 | UC-545 | 5GA-Q5 | |
| C56 | 5000 | | | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C57 | .01 | | †63B6-5 | †PA-139 | DD-103 | K082 | 811-01 | DC-521 | 5HK-81 | |
| C58 | 5000 | 1000 | | HVD15-00047 | DD16-502 | | 1R5KV-472 | | 10HK-D47 | |
| C59 | 150 | | †63B6-4 | †PA-172 | †PC-178 | TP36 | GP2K-151 | UC-5315 | 5GA-T15 | |
| C60 | .047 | 600 | | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C61 | 30 | | | | | | | | | Note 3 |
| C62 | .22 | 400 | | P488-22 | | CUB4P23 | | PT4023 | 4TM-P22 | Note 3 |
| C63 | 10000 | | | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-81 | |
| C64A | .002 | | | | | | | PT622 | | |
| B | .005 | | ♦63B6-2 | ♦PA-110 | ♦PC-100 | ♦1S7M1 | ♦1405-01 | PT625 | ♦V-1 | |
| C | .005 | | | | | | | PT625 | | |
| C65 | 4700 | 500 | | 1464-005 | | 1R5D47 | | MC3465 | M5-35 | |
| C66 | .047 | 600 | 84A2-14 | | | | | | | |
| C67 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C68 | .047 | 600 | | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C69 | 1000 | 500 | | 1468-001 | DS-102 | 1W5D1 | GP2L-102 | MC255 | 1FM-31 | |
| C70 | 1000 | 500 | | 1468-001 | DS-102 | 1W5D1 | GP2L-102 | MC255 | 1FM-31 | |
| C71 | .002 | 600 | | P688-002 | DS-202 | CUB6D2 | GP2-233-202 | PT622 | 6TM-D2 | |
| C72 | .0047 | 600 | | P688-0047 | DS-472 | CUB6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C73 | .047 | 400 | | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C74 | 47 | 500 | | 1463-00005 | | 22R5Q47 | | MC8225 | M5-45 | |
| C75 | 3900 | 500 | 65B1-83 | 1464-004 | | 1R5D39 | | MC3463 | M5-24 | |
| C76 | 330 | 500 | | 1469-00035 | | 5R5T33 | | | | |
| C77 | 270 | 500 | | 1469-0003 | | 22R5T27 | | MCB241 | M5-33 | |
| C78 | .01 | 600 | | P688-01 | DS-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C79 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C80 | .047 | 600 | | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C81 | .047 | 600 | | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C82 | .047 | 600 | | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C83 | .1 | 400 | | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C84 | 53 | 2000 | | | | | | | | Note 4 |

Note 1. Not used in all versions
Note 2. Used only in versions with UHF tuner.
Note 3. Not used when V13 is a 12AU7.
Note 4. Some versions may use 47MMF in this application (part #65B1-84).
Note 5. Not used when V13 is a 6CB6.
♦ Items C64A, C64B, C64C, R79A, R79B, R79C are combined in one unit.
† Items C57, R64A, R64B are combined in one unit.
‡ Items C59, R44A, R44B are combined in one unit.

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA ADMIRAL PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 1000Ω | ½ | 75B11-22 | *QJ-442 | RTV-404 | SBBT-732-8 | | Contrast - Panel |
| B | 1Meg | ½ | | | | | | Volume and switch tapped at 650Ki- rear |
| R2A | 2Meg | ½ | 75B13-22 | QJ1-139 | A47-2Meg-S | AB-75 | U-56 | Tone |
| B | Shaft | | Not Reg. | Not Reg. | KS8-3 | AK-4 | Not Reg. | Attach to R2A |
| R3A | 750Ω | 2 | 75B17-1 | *QJ-425 | | WK751 | | Focus - Panel wire wound |
| B | 100KΩ | ½ | | | | UR15L | | Brightness - Rear |
| R4A | 1.5Meg | ½ | 75B13-26 | QJ1-138 | A47-1.5Meg-S | AB-75 | U-155 | Vert. Hold |
| B | Shaft | | Not Reg. | Not Reg. | KS8-3 | AK-4 | Not Reg. | Attach to R4A |
| R5A | 25KΩ | ½ | 75B13-28 | QJ1-120 | A47-25K-S | AB-26 | U-29 | Horiz. Hold |
| B | Shaft | | Not Reg. | Not Reg. | KS8-3 | AK-4 | Not Reg. | Attach to R5A |
| R6A | 3000Ω | ½ | 75C13-7 | QJ1-112 | A47-3000-S | AB-8 | U-8 | Vert. Linearity |
| B | Shaft | | Not Reg. | Not Reg. | FKS-1/4 | AK-1 | Not Reg. | Attach to R6A |
| R7A | 150KΩ | ½ | 75B13-29 | QJ1-129 | A47-150K-S | AB-46 | U-43 | Horiz. Drive |
| B | Shaft | | Not Reg. | Not Reg. | FKS-1/4 | AK-1 | Not Reg. | Attach to R7A |
| R8A | 5Meg | ½ | 75C1-54 | QJ1-141 | A47-5Meg-S | AB-87 | U-67 | Noise Gate |
| B | Shaft | | Not Reg. | Not Reg. | FKS-1/4 | AK-3 | Not Reg. | Attach to R8A |
| R9A | 2.5Meg | ½ | 75B13-3 | QJ1-239 | A47-2.5Meg-S | AB-83 | SU-565 | Height |
| B | Shaft | | Not Reg. | Not Reg. | FKS-1/4 | AK-1 | Not Reg. | Attach to R9A |
| R10A | 5Meg | ½ | 75C1-54 | QJ1-141 | A47-5Meg-S | AB-87 | U-67 | DX Range finder |
| B | Shaft | | Not Reg. | Not Reg. | FKS-1/4 | AK-3 | Not Reg. | Attach to R10A |

* CONCENTRIKIT EQUIVALENT KIT-K-2 BASE ELEMENTS AND SHAFTS B17-106 and P1-126 (Panel) B18-137 X and R2-213 (rear) and SWITCH 76-1
♦ CONCENTRIKIT EQUIVALENT KIT-K-3 BASE ELEMENTS AND SHAFTS W13-105 AND P3-121 (panel) B1J-128 AND R12-131 (rear)

## RESISTORS

| ITEM No. | RATING OHMS | RATING WATT | REPLACEMENT DATA ADMIRAL PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R11 | 15KΩ | ½ | | BTS-15K | |
| R12 | 47KΩ | ½ | | BTS-47K | |
| R13 | 330KΩ | ½ | | BTS-330K | |
| R14 | 220KΩ | ½ | | BTS-220K | |
| R15 | 1500Ω | 1 | | BTA-1500 | |
| R16 | 10KΩ | ½ | | BTS-10K | |
| R17 | 220KΩ | ½ | | BTS-220K | Note 1 |
| R18 | 8200Ω | ½ | | BTS-8200 | |
| R19 | 15KΩ | ½ | | BTS-15K | |
| R20 | 10KΩ | ½ | | BTS-10K | |
| R21 | 15KΩ | ½ | | BTS-15K | |
| R22 | 100KΩ | ½ | | BTS-100K | |
| R23 | 15Meg | ½ | | BTS-15Meg | |
| R24 | 2.7Meg | ½ | | BTS-2.7Meg | |
| R25 | 1.5Meg | ½ | | BTS-1.5Meg | |
| R26 | 8200Ω 5% | ½ | | BTS-8200 5% | |
| R27 | 1000Ω | ½ | | BTS-1000 | |
| R28 | 150KΩ | ½ | | BTS-150K | |
| R29 | 470 | ½ | | BTS-47 | |
| R30 | 470Ω | ½ | | BTS-470 | |
| R31 | 15KΩ 5% | ½ | | BTS-15K 5% | |
| R32 | 330Ω | ½ | | BTS-330 | |
| R33 | 1000Ω | ½ | | BTS-1000 | |
| R34 | 27KΩ | ½ | | BTS-27K | |
| R35 | 68Ω | 1 | | BTS-68 | |
| R36 | 10KΩ 5% | ½ | | BTS-10K 5% | |
| R37 | 330Ω | ½ | | BTS-330 | |
| R38 | 150Ω | ½ | | BTS-150 | |
| R39 | 1000Ω | ½ | | BTS-1000 | |
| R40 | 4700Ω 5% | ½ | | BTS-4700 5% | |
| R41 | 330Ω | ½ | | BTS-330 | Note 1 |
| R42 | 18KΩ | 1 | | BTA-18K | |
| R43 | 4700Ω | 2 | | | |
| R44A | 15KΩ | ½ | | †63B6-4 BTS-15K | |
| B | 270KΩ | ½ | | BTS-270K | |
| R45 | 270KΩ | ½ | | BTS-270K | |
| R46 | 1Meg | ½ | | BTS-1Meg | |
| R47 | 6200Ω 5% | ½ | | BTS-8200 5% | |
| R48 | 100KΩ | ½ | | BTS-100K | |
| R49 | 6800Ω | ½ | | BTS-6800 | |
| R50 | 180KΩ | ½ | | BTS-180K | |
| R51 | 270KΩ | ½ | | BTS-270K | |
| R52 | 150KΩ | ½ | | BTS-150K | |
| R53 | 33KΩ | ½ | | BTS-33K | |
| R54 | 470KΩ | ½ | | BTS-470K | |
| R55 | 120Ω | ½ | | BTS-120 | |
| R56 | 100KΩ | ½ | | BTS-100K | |
| R57 | 1000Ω | ½ | | BTS-1000 | |

## RESISTORS (cont)

| ITEM No. | RATING OHMS | RATING WATT | REPLACEMENT DATA ADMIRAL PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R58 | 390Ω | ½ | | BTS-390 | |
| R59 | 47KΩ | ½ | | BTS-47K | |
| R60 | 10KΩ | ½ | | BTS-10K | |
| R61 | 10KΩ | ½ | | BTS-10K | |
| R62 | 82KΩ | ½ | | BTS-82K | |
| R63 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R64A | 470KΩ | ½ | †63B6-5 | BTS-470K | |
| B | 1Meg | ½ | | BTS-1Meg | |
| R65 | 330Ω | 1 | | BTA-330 | |
| R66 | 470Ω | 2 | | BTB-470 | |
| R67 | 47KΩ | ½ | | BTS-47K | |
| R68 | 470KΩ | ½ | | BTS-470K | |
| R69 | 3.3Meg | ½ | | BTS-3.3Meg | |
| R70 | 33KΩ | 2 | | BTB-33K | |
| R71 | 56KΩ | ½ | | BTS-56K | |
| R72 | 220KΩ | ½ | | BTS-220K | |
| R73 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R74 | 2.2Meg | ½ | | BTS-2.2Meg | |
| R75 | 2200Ω | ½ | | BTS-2200 | |
| R76 | 4700Ω | ½ | | BTS-4700 | |
| R77 | 2700Ω | ½ | | BTS-2700 | |
| R78 | 22KΩ | 2 | | BTB-22K | Note 2 |
| R78A | 22KΩ | ½ | ♦63B6-2 | BTS-22K | |
| B | 8200Ω | ½ | | BTS-8200 | |
| C | 8200Ω | ½ | | BTS-8200 | |
| R80 | 1.2Meg | ½ | | BTS-1.2Meg | |
| R81 | 1Meg | ½ | | BTS-1Meg | |
| R82 | 10KΩ 5% | ½ | 60B7-103 | BTS-10K 5% | |
| R83 | 1Meg | ½ | | BTS-1Meg | |
| R84 | 820Ω | ½ | | BTS-820 | |
| R85 | 2700Ω | ½ | | BTS-2700 | |
| R86 | 560Ω | ½ | | BTS-560 | |
| R87 | 560Ω | ½ | | BTS-560 | |
| R88 | 1200Ω | 2 | | BTB-1200 | |
| R89 | 100KΩ 5% | ½ | | BTS-100K 5% | |
| R90 | 100KΩ 5% | ½ | | BTS-100K 5% | |
| R91 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R92 | 470KΩ | ½ | | BTS-470K | |
| R93 | 47KΩ | 2 | | BTB-47K | |
| R94 | 1500Ω | ½ | | BTS-1500 | |
| R95 | 5600Ω | ½ | | BTS-5600 | |
| R96 | 120KΩ | ½ | | BTS-120K | |
| R97 | 100KΩ | ½ | | BTS-100K | |
| R98 | 5600Ω | ½ | | BTS-5600 | |
| R99 | 1Meg | ½ | | BTS-1Meg | |
| R100 | 68Ω | ½ | | BTS-68 | |
| R101 | 47Ω | 1 | | | |
| R102 | 82Ω | ½ | | BTS-82 | |
| R103 | 8200Ω | 3 | | BTB-8200 | |
| R104 | 1000Ω | 2 | | BTB-1000 | |
| R105 | 1000Ω | ½ | | BTS-1000 | |
| R106 | 4.7Ω | 1 | | | |
| R107 | 4250Ω | 10 | | | |
| R108 | 3000Ω | 15 | | | |
| R109 | 270KΩ 5% | ½ | | | |
| R110 | 12KΩ | 5 | | | Note 2 |

Note 1. Some versions may use a 100Ω resistor in this application.
Note 2. Not used in all versions
♦ Items R78A, R79B, R79C, C64A, C64B, C64C are combined in one unit.
† Items R64A, R64B, C57 are combined in one unit.
‡ Items R44A, R44B, C59 are combined in one unit.

## TRANSFORMER (POWER)

| ITEM No. | RATING PRI. | RATING SEC. 1 | RATING SEC. 2 | REPLACEMENT DATA ADMIRAL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | RCA TYPE No. | Halldorson PART No. | Thordarson PART No. |
|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 117VAC | 604VCT | 5VAC | 80C35-3 | P-8331⑫ | P-3077 | | | P9733 | |
| | ①1.72A | .240ADC | ③3A | | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3VAC | | | | | | | | | |
| | ②9.4A | | | | | | | | | |

① Drill new mounting holes.
② Parallel and phase 6.3V windings for Sec. #3.

## TRANSFORMERS (SWEEP CIRCUITS)

| ITEM No. | USE | ADMIRAL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | RCA TYPE No. | Halldorson PART No. | Thordarson PART No. |
|---|---|---|---|---|---|---|---|---|
| T2 | Vert.Osc. Trans. | 78A18-4 | A-8125 | A-3003 | A-97X | 209T1 ① | B6702 | 24A87 ① |
| T3 | Horiz.Output Trans. | 78D41-2 | A-8135 * | HVO-22* | D-22 * & WC-11② | 232T1 * & 214R1 ② | FB41i * & RF800③ | FLY-14* & WC-20 ② |
| T4 | Vert.Output Trans. | 79B40-3<br>79B40-2 ③ | A-8123 ① | A-3037① | A-102X ① | 222T1 ① | 21B04 ① | 26S52 ① |
| T5A | Yoke-Horiz.(20MH) | 94C51-1 | DY-HA | MDF-73 | Y-22-1 | 222D1 | DF605 | Y-9 |
| B | Vert.(40MH) | | | | | | | |
| T6 | Focus Coil | 69D117-12<br>69D117-1④ | | | | | | |
| T7 | Horiz.Linearity(1.5-10MH) | 94A50-1 | WC-5⑤⑥ | MWC-6⑤ | WC-12⑩⑦ | 213R1 ⑤ | RF800⑤⑫ | WC-18 ⑤ |
| T8 | Width-(1.2-2.1MH)<br>(4-28MH) | 94A50-2 | | | | | | |

① Drill one new mounting hole.
② Drill new mounting holes.
③ Alternate vertical output transformer
④ Alternate focus coil.
⑤ Drill new mounting hole or use original slider and core.
⑥ Connect to coded black and orange terminals.
⑦ Connect to coded blue and red terminals.
⑧ Connect to coded #3 and #4 terminals.

## *HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

| | ORIGINAL TERMINAL CONNECTIONS | Stancor Replacement Connections | Merit Replacement Connections | Triad Replacement Connections | RCA Replacement Connections | Halldorson Replacement Connections | Thordarson Replacement Connections |
|---|---|---|---|---|---|---|---|
| | 4 | 4 | 4 | 9 | 10 | 9 | 9 |
| | 3 | 3 | 3 | 8 & 1 | 8 | 8 | 8 & 7 |
| | 2 | 2 | 1 | 1 | 3 | 1 | 1 |
| | 8 | 6 | 8 | WC-11 (orange term) | 1 | RF800 (#4 Term) | WC-20 (#1 Term) |
| | 1 | 7 | 7 | WC-11 (black term) | 2 | RF800 (#3 Term) | WC-20 (#2 Term) |
| Connect Width Coil Across → | 8 & 1 | 6 & 7 | 6 & 7 | WC-11 Red & Blue Terms T & 1 | 212R1 1 & 2 | RF800 #1 & #2 terms T & 1 | WC-20 #3 & #4 terms T & 1 |
| Special Notes → | | ⑨ | ⑨ | ⑩ ⑪ | ⑪ | ⑩ ⑪ | ⑩ ⑪ |

⑨ If picture is out of phase, reverse AFC winding.
⑩ If picture is out of phase, reverse primary or secondary of replacement width coil.
⑪ Remove original width coil and R104 from circuit. Connect yoke return to terminal #3.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE PRI. | IMPEDANCE SEC. | REPLACEMENT DATA ADMIRAL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T9 | 5.1KΩ | 3Ω | 79B49-2 | A-3877 | A-3026 | S-6X | Z1000 | 24S51 ① | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS SIZE | RATINGS FIELD | RATINGS V. C. IMP. | REPLACEMENT DATA ADMIRAL PART No. | JENSEN PART No. | QUAM PART No | NOTES |
|---|---|---|---|---|---|---|---|
| SP1 | 8" | PM | 3Ω | 78B39-3 | ST-105 Mod. P5-X | 5A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA ADMIRAL PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1A | Ant. Coil | 0Ω CT | 0Ω | 94D46-52 | | | | Channel 2 |
| B | Ant. Coil | 0Ω CT | 0Ω | 94D46-53 | | | | Channel 3 |
| C | Ant. Coil | 0Ω CT | 0Ω | 94D46-54 | | | | Channel 4 |
| D | Ant. Coil | 0Ω CT | 0Ω | 94D46-55 | | | | Channel 5 |
| E | Ant. Coil | 0Ω CT | 0Ω | 94D46-56 | | | | Channel 6 |
| F | Ant. Coil | 0Ω CT | 0Ω | 94D46-57 | | | | Channel 7 |
| G | Ant. Coil | 0Ω CT | 0Ω | 94D46-58 | | | | Channel 8 |
| H | Ant. Coil | 0Ω CT | 0Ω | 94D46-59 | | | | Channel 9 |
| I | Ant. Coil | 0Ω CT | 0Ω | 94D46-60 | | | | Channel 10 |
| J | Ant. Coil | 0Ω CT | 0Ω | 94D46-61 | | | | Channel 11 |
| K | Ant. Coil | 0Ω CT | 0Ω | 94D46-62 | | | | Channel 12 |
| L | Ant. Coil | 0Ω CT | 0Ω | 94D46-63 | | | | Channel 13 |
| L2 | Fil. Choke | 0Ω | | 98A45-13 | | | | |
| L3 | Neutr.Coil | 0Ω | | 94C37-89 | | | | |
| L4A | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-72 | | | | Channel 2 |
| B | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-73 | | | | Channel 3 |
| C | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-74 | | | | Channel 4 |
| D | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-75 | | | | Channel 5 |
| E | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-76 | | | | Channel 6 |
| F | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-77 | | | | Channel 7 |
| G | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-78 | | | | Channel 8 |
| H | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-79 | | | | Channel 9 |
| I | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-80 | | | | Channel 10 |
| J | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-81 | | | | Channel 11 |
| K | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-82 | | | | Channel 12 |
| L | RF, Mixer Grid & Osc. Coil | 0Ω | | 94D46-83 | | | | Channel 13 |
| L5 | Fil. Choke | 0Ω | | 98A45-14 | | | | |
| L6 | RF Coil | 0Ω | | | | | | |
| L7 | Conv. Plate | .5Ω | | 98A45-77 | | | | |
| L8 | 1st.Video IF | .2Ω | | 72B109-1 | 17-1001 * | TV-100 * | 6186 * | |
| L9 | Fil. Choke | 0Ω | | 73A2-5 | 19-3001 | TV-189 | 4604 | .6 Microhenry |
| L10 | 2nd. Video IF | .4Ω | .4Ω | 72C96-29 | 17-1062 | | 6250 | |
| L11 | 21.25MC Trap | .1Ω | | 72C96-30 | 19-1020 ■ | TV-113 ■ | 6176 ■ | |
| L12 | 3rd.Video IF | .4Ω | .4Ω | 72D111-1 | 17-1066 | | 6349 | |
| L13 | 4th.Video IF | .3Ω | .3Ω | 72B110-1 | | | | |
| L14 | Series Peaking Coil | 5.3Ω | | 73A5-15 | 19-3180 ▲ | TV-184 ▲ | 6180 ▲ | 190 Microhenries, wound on 4.7KΩ resistor |
| L15 | Shunt Peaking Coil | 18Ω | | 73A5-7 | 19-3500 | TV-188 | 6174 | 500 Microhenries |
| L16 | 4.5MC Trap | 4.4Ω | | 72B99-3 | 20-1005 ♦ | TV-151 | 1470 | |
| L17 | Series Peaking Coil | 6Ω | | 73A5-16 | 19-3250 ▲ | TV-185 ▲ | 6181 ▲ | 250 Microhenries, wound on 18KΩ resistor |
| L18 | Shunt Peaking Coil | 22Ω | | 73A11-1 | | | | 790 Microhenries wound on 10KΩ resistor |
| L19 | RF Choke | 10.5Ω | | 73A5-2 | | | 4630 ¶ | 58 Microhenries, wound on 1Meg resistor |
| L20 | 1st.Sound IF | 4.6Ω | | 72B99-4 | 17-3400 | TV-151 | 1470 | |
| L21 | 2nd.Sound IF | 4.6Ω | | 72B99-4 | 17-3400 | TV-151 | 1470 | |
| L22 | Ratio Det. | 3.3Ω | .3ΩCT | 72B88-2 | 17-1033 † | TV-110 † | 1468 or 6205 †† | Tertiary winding -.9Ω |
| L23 | Horiz. Osc. | 48Ω | | 78A18-4 | 19-1576 | TV-183 | 6210 | |

* Detune trap
■ Enlarge mounting hole.
▲ Parallel with 4.7KΩ resistor.
♦ Disconnect capacitor in parallel.
● Parallel with 18KΩ resistor.
¶ Parallel with 1Meg resistor.
† Disconnect capacitor.
†† Use adaptor plate and disconnect capacitor.

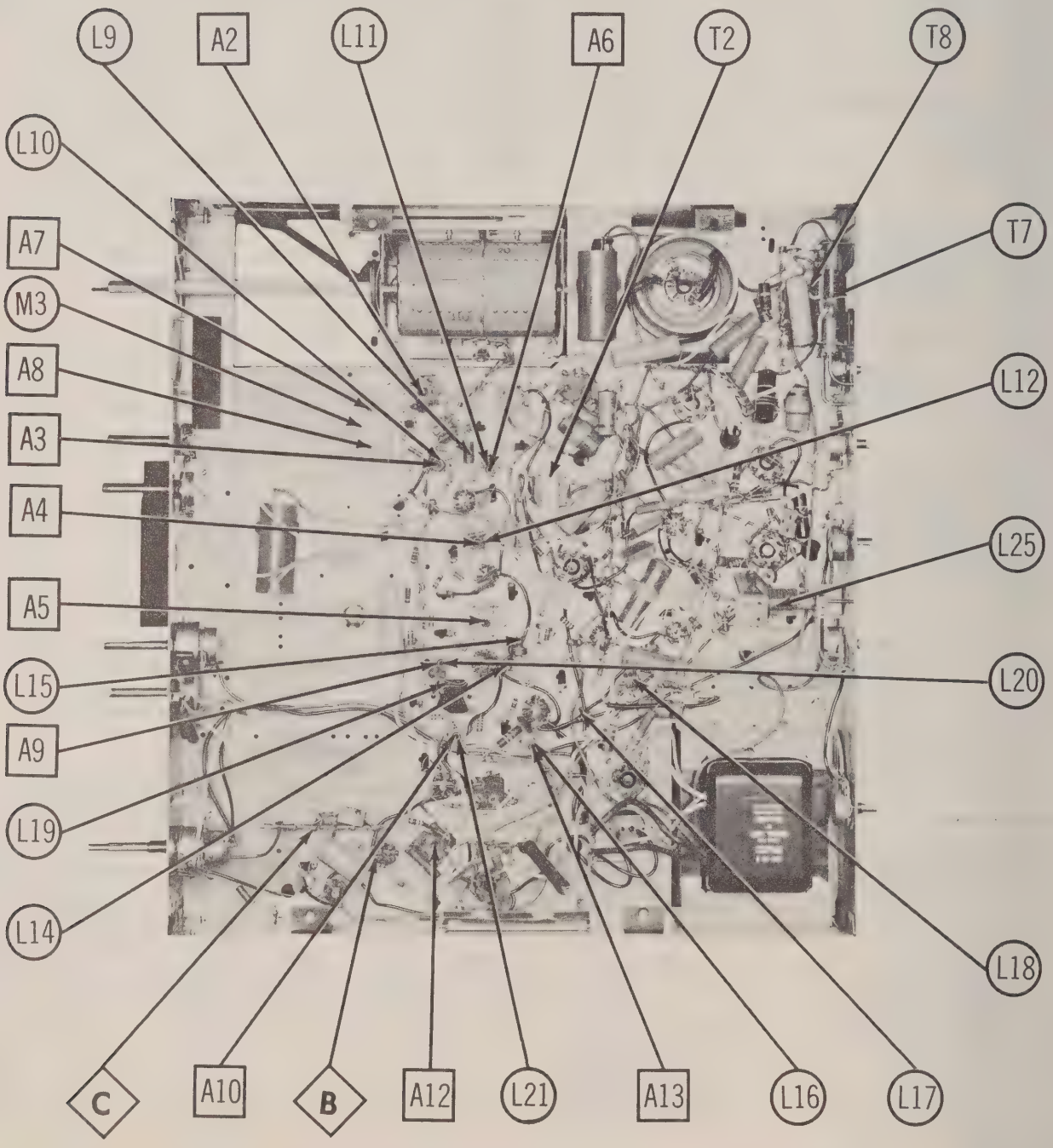
# PARTS LIST AND DESCRIPTIONS (Continued)

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ADMIRAL PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 8AG | 3/8A 250V | 84A43 | 84A5-1 | 362.375 (3/8A-8AG) | 387001 | AGX 3/8 | 4520 |

## MISCELLANEOUS

| ITEM No. | PART NAME | ADMIRAL PART No. | NOTES |
|---|---|---|---|
| M2 | Tuner | 94D61-1 | VHF-All chassis |
| | Tuner | A4000 | UHF-Chassis 22G2, 22G2Z, 22N2 |
| M3 | Trap | 73C12-1 | Adjacent channel assembly. |
| M4 | Centering Magnet | | Part of focus coil (T6) |
| M5 | Ion trap | 94A15-3 | |




CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

# TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

## HIGH VOLTAGE

**LOSS OF HIGH VOLTAGE**

Check by substitution V17, V18, V19 and V20. Check M1 fuse. Check waveform W17.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T3, T5A, T6, T7, C81, C82, C80, C4C, R103 and other associated components. | Check L23, C75, C76, C78, R97, R95, and other associated components. |

**INSUFFICIENT HIGH VOLTAGE**

Check by substitution V18, V19, V20 and V21. Check C78, C4C, R103 and R101. Check adjustments R7, B2 and B3. Check components associated with V18.

**BLOOMING**

Check by substitution V18, V19, V20 and V21. Check B+ filter and decoupling network.

## GENERAL

**RASTER, SOUND, NO PICTURE**

Follow procedure outlined under "Loss of Video".

**RASTER, PICTURE, NO SOUND**

Follow procedure outlined under "Weak or No Sound".

**RASTER, NO SOUND, NO PICTURE**

Check by substitution V1, V2, V3, V4, V5, V6, V7 and V8. Check video IF components for failure or change of value.

**NO RASTER, NO SOUND**

Follow procedure outlined under "Dead Set".

**KEYSTONE EFFECT**

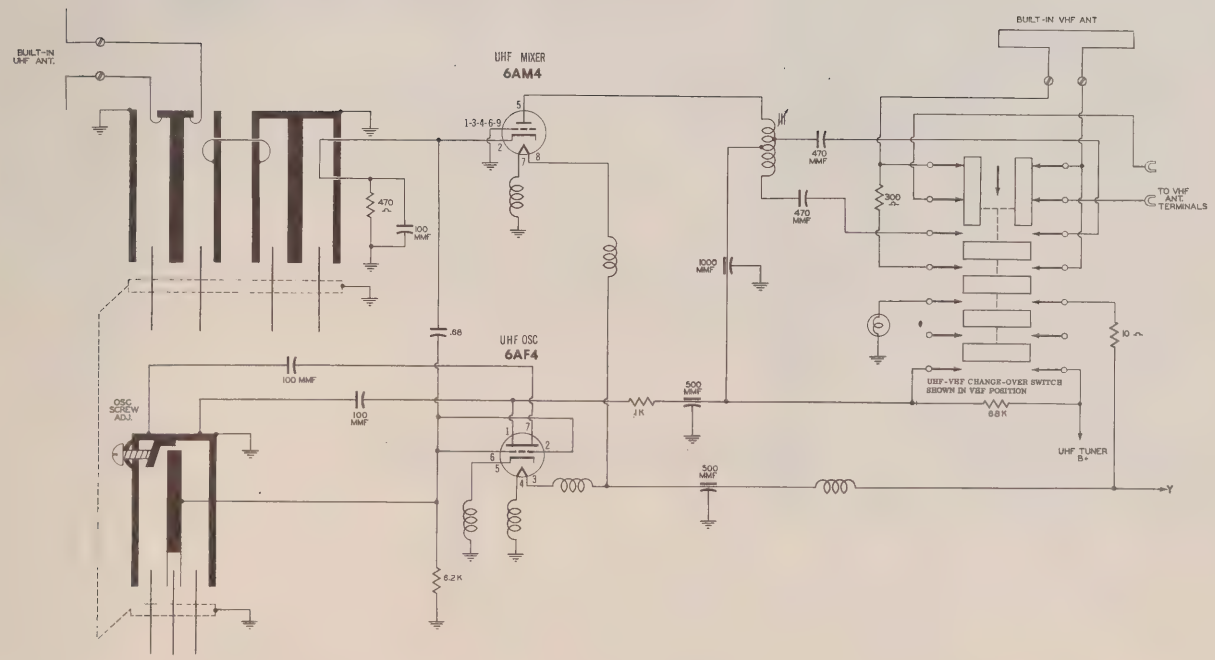
Check T5 and its associated components.

**INTERMITTENT STREAKS**

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.






A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER PART NO. A4000 USED WITH CHASSIS 22G2 22G2Z AND 22N2 STAMPED RUN 3 OR HIGHER

## UHF TUNER SCHEMATIC

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

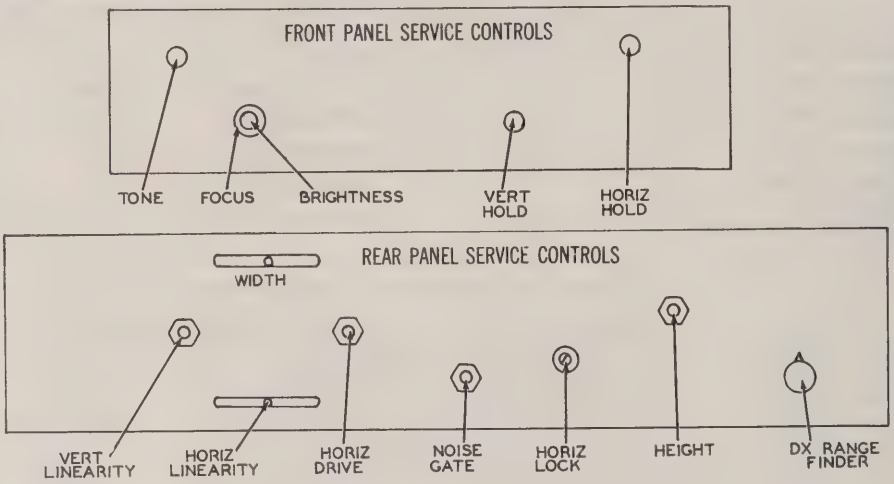
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION




SPECIAL ADJUSTMENTS - DX RANGE FINDER

Reception of weak signals can often be improved by advancing the DX range finder in a clockwise direction. However, if the control is turned too far in this direction the picture may disappear entirely on strong signals.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal lock slug (L23) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L22) located on bottom of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side and up and down until the picture is properly centered.

# DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type control knobs from front panel. (Focus knob behing control door).
2. Remove 10 wood screws and 2 metal screws. Remove rear cover.
3. Disconnect speaker leads, depress 2 spring clips on speaker mounting board and slide speaker out.
4. Remove 4 chassis bolts. Remove chassis.

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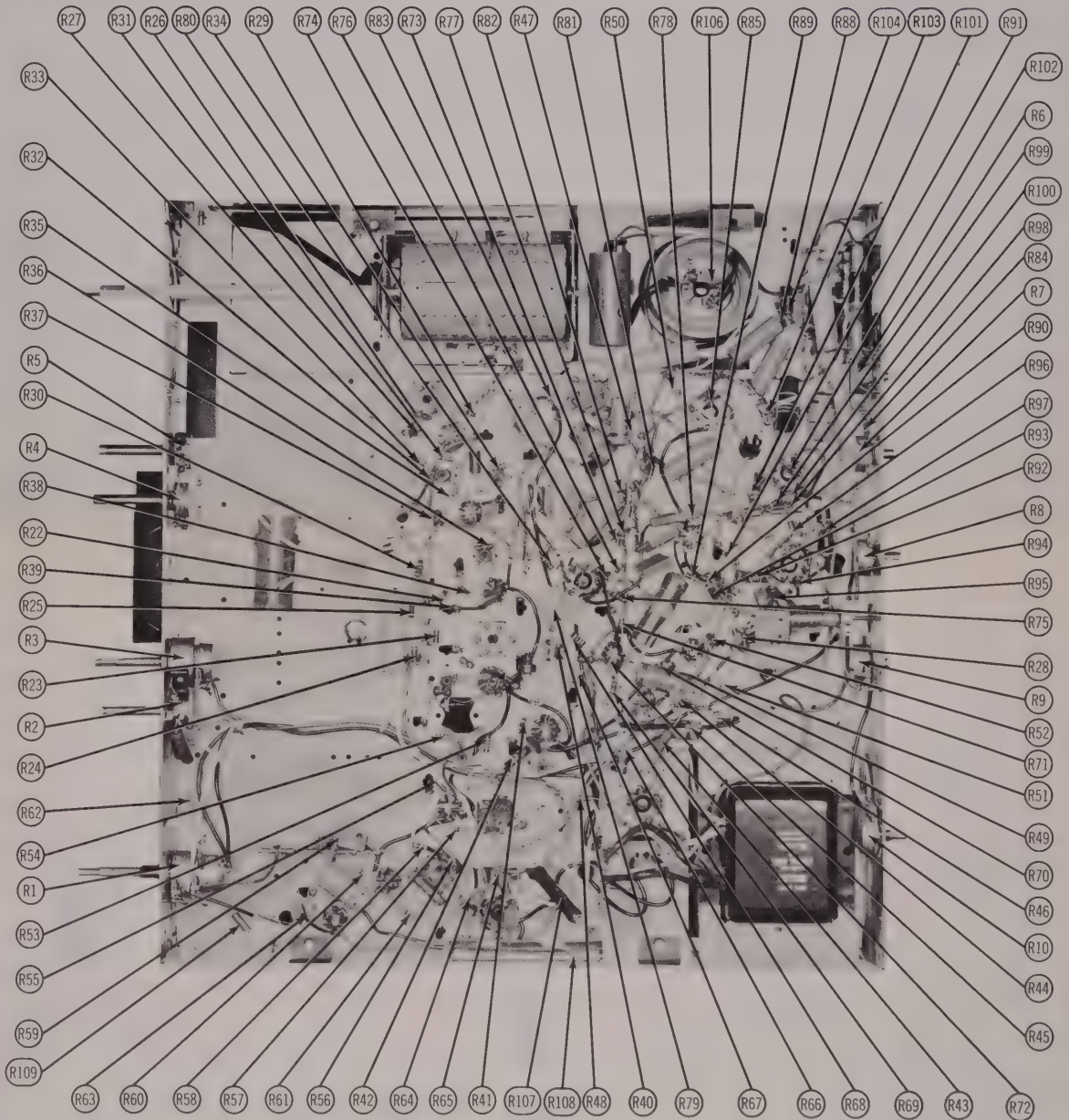
DENVER, COLORADO




CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
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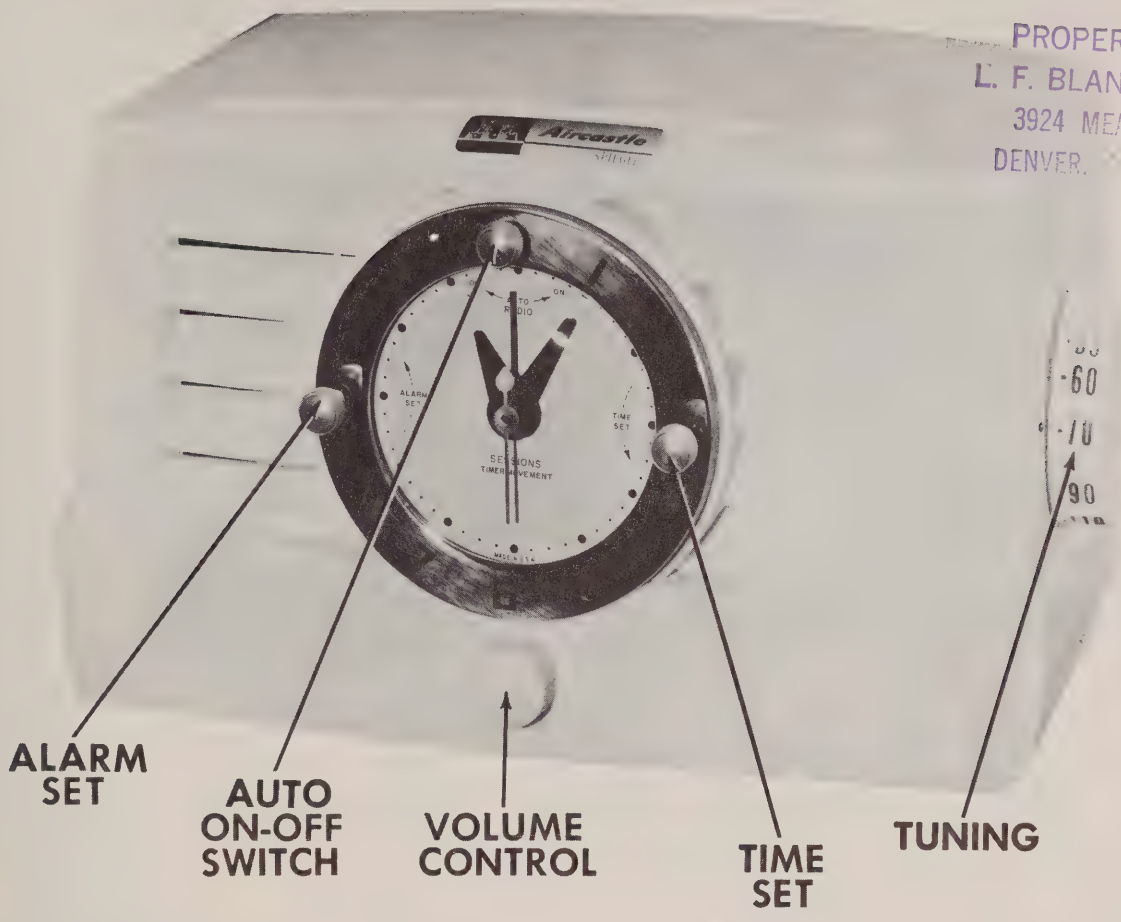
DENVER

AIRCASTLE
MODELS 652.5C1M, V




AIRCASTLE
MODELS 652.5C1M, V

| | |
|---|---|
| TRADE NAME | Aircastle Models 652.5C1M, V |
| SUPPLIER | Spiegel, Inc., 1061 W. 35th.St., Chicago 9, Ill. |
| TYPE SET | AC Operated AM Superheterodyne Receiver With Electric Clock |
| TUBES (Five) | Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier |
| POWER SUPPLY | 110-120 Volts AC-60 Cycles — RATING .26 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535KC-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis. | 455KC (400%Mod) | Tuning gang fully open | Across voice coil | A1, A2 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2. | | Loop | 1620KC | " | " | A3 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 1400KC | Tune to 1400KC signal | " | A4 | " |



"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | AIRCASTLE PART No. | STANDARD REPLACEMENT | | |
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | IF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V3 | Det.-AVC-AF Amp. | 12AT6 | 12AT6 | 7BT | |
| V4 | Output | 50C5 | 50C5 | 7CV | |
| V5 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | AIRCASTLE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | 40 | 150 | CE-1000 | PRS150/50-30-20 | | BBRT44215 | | TCT3116 | TVA-3448 | Red |
| B | 40 | 150 | | | | | | | | Red |
| C | 20 | 150 | | | | | | | | Green |
| C2 | .05 | 400 | | P488-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C3 | 270 | | | S1270 | D6-271 | TP41 | GP2K-271 | UC-5327 | 5GA-T27 | Note 1 |
| C4 | 270 | | | S1270 | D6-271 | TP41 | GP2K-271 | UC-5327 | 5GA-T27 | Note 1 |
| C5 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C6 | 270 | | | S1270 | D6-271 | TP41 | GP2K-271 | UC-5327 | 5GA-T27 | Note 1 |
| C7 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C8 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C9 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C10 | .1 | 400 | | P488-1 | DF-503 | CUB4P1 | | PT401 | 4TM-P1 | |

Note 1. Some versions use 220MMF in this application.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | AIRCASTLE PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 500KΩ | ½ | VC-52 | Q13-133 | A47-500K-Z | BSK-60 | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | Not Req. | Not Req. | Attach to R1A |

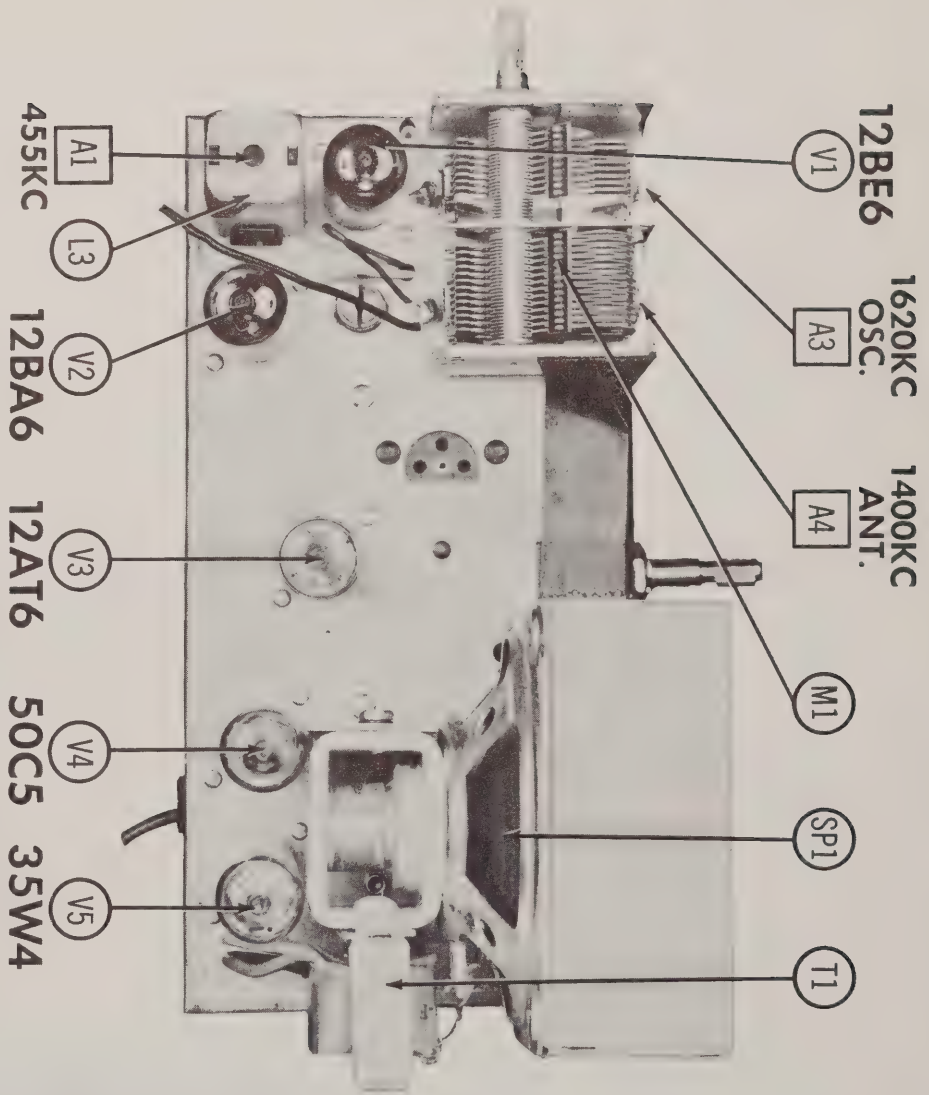
## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | AIRCASTLE PART No. | IRC PART No. | |
| R2 | 22KΩ | ½ | | BTS-22K | |
| R3 | 4700Ω | ½ | | BTS-4700 | Note 1 |
| R4 | 68KΩ | ½ | | BTS-68K | |
| R5 | 2.2Meg | ½ | | BTS-2.2Meg | |
| R6 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R7 | 220KΩ | ½ | | BTS-220K | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | AIRCASTLE PART No. | IRC PART No. | |
| R8 | 470KΩ | ½ | | BTS-470K | |
| R9 | 150Ω | 1 | | BTA-150 | |
| R10 | 1500Ω | 1 | | BTA-1500 | Note 2 |
| R11 | 2200Ω | 1 | | BTA-2200 | Note 3 |
| R12 | 18Ω | ½ | | BTS-18 | |

Note 1. Some versions may use a 6800Ω resistor in this application.
Note 2. Some versions may use a 330Ω resistor in this application.
Note 3. Not used in some versions.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | AIRCASTLE PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T1 | 2.4KΩ | 3Ω | Part of Spkr. | A-3332① | A-3025 ① | S-12X ① | Z1101 ① | 26S58 ① | ① Bend mounting tabs down, file out slots, mount on original mounting bracket. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | AIRCASTLE PART No. | VIKING PART No. | QUAM PART No. | |
| SP1 | 3½" | PM | 3Ω | SP-31 | 35J4 | 3A07 | |

## COILS (RF-IF)

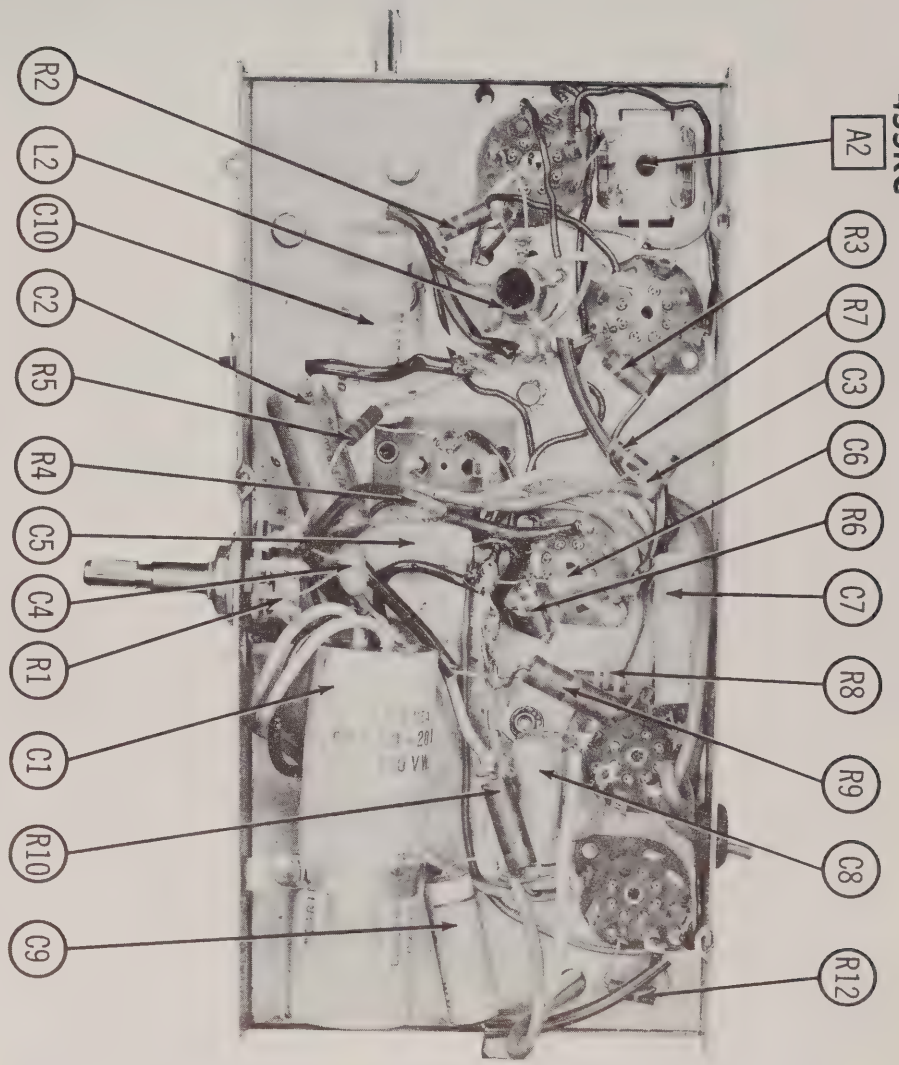
| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | AIRCASTLE PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Loop Ant. | 2.8Ω | | LP-514 | | | | Includes cabinet back |
| L2 | Osc. Coil | .5Ω | 5.5Ω | LC-10 | 14-1073 * | | 69-Osc.■ | |
| L3 | IF Trans. | 19Ω | 19Ω | LF-24 | 16-6758 | 12-C1 | BC-352 | |

* Leads sufficient mounting support.
■ Drill new mounting hole.

## MISCELLANEOUS

| ITEM No. | PART NAME | AIRCASTLE PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | CV-21 | 33-456MMF, 27-190MMF |
| M2 | Clock | EC-500 | 3 Button |
| | Cabinet | CB-5C1M | Model 652.5C1M |
| | Cabinet | CB-5C1V | Model 652.5C1V |
| | Knob | KNV-5C1 | Volume |
| | Knob | KNT-5C1 | Tuning |

## CHASSIS—BOTTOM VIEW

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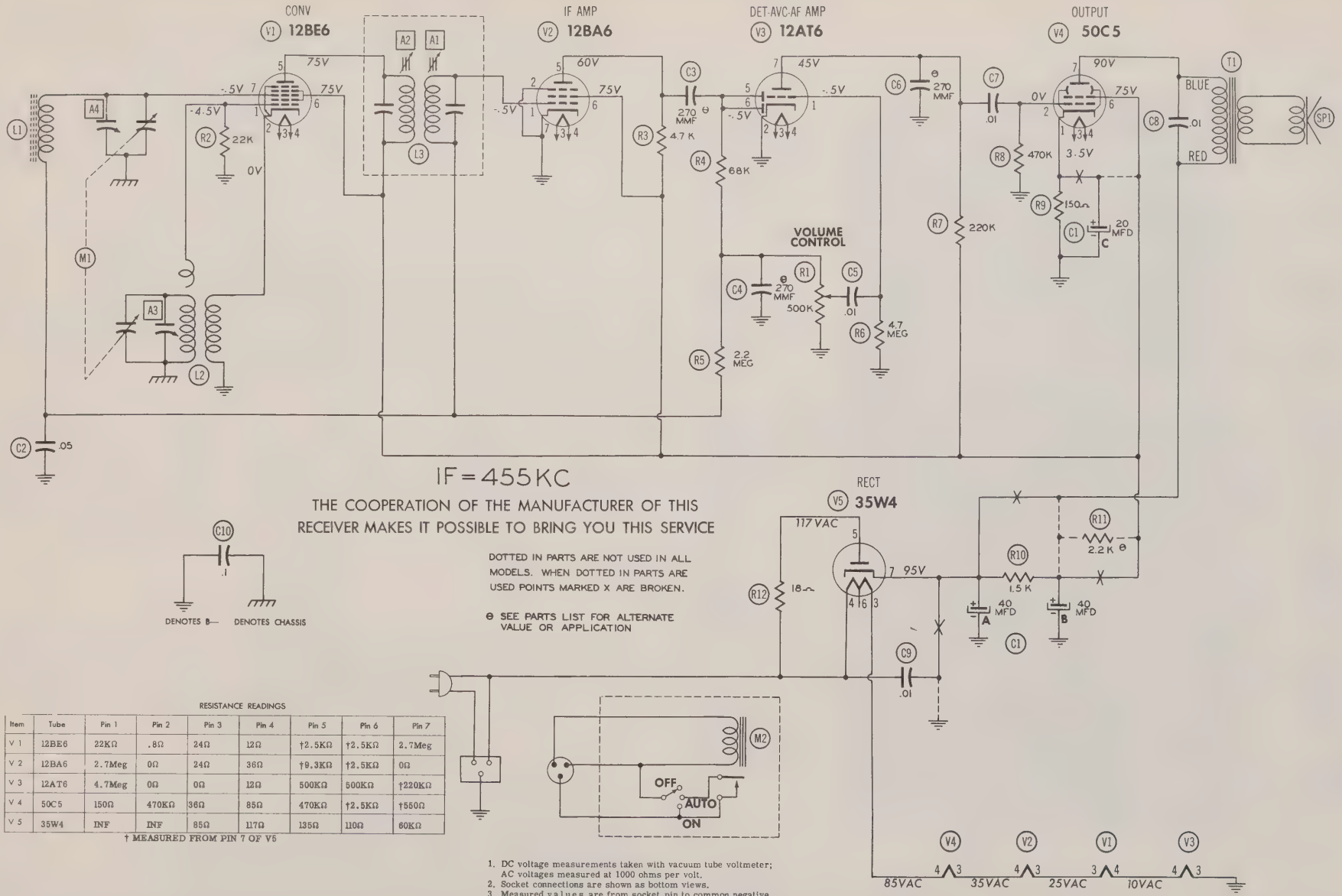
AIRCASTLE
MODEL 652.5C1M




IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DENOTES B— DENOTES CHASSIS

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 22KΩ | .8Ω | 24Ω | 12Ω | †2.5KΩ | †2.5KΩ | 2.7Meg |
| V 2 | 12BA6 | 2.7Meg | 0Ω | 24Ω | 36Ω | †9.3KΩ | †2.5KΩ | 0Ω |
| V 3 | 12AT6 | 4.7Meg | 0Ω | 0Ω | 12Ω | 500KΩ | 500KΩ | †220KΩ |
| V 4 | 50C5 | 150Ω | 470KΩ | 36Ω | 85Ω | 470KΩ | †2.5KΩ | †550Ω |
| V 5 | 35W4 | INF | INF | 85Ω | 117Ω | 135Ω | 110Ω | 60KΩ |

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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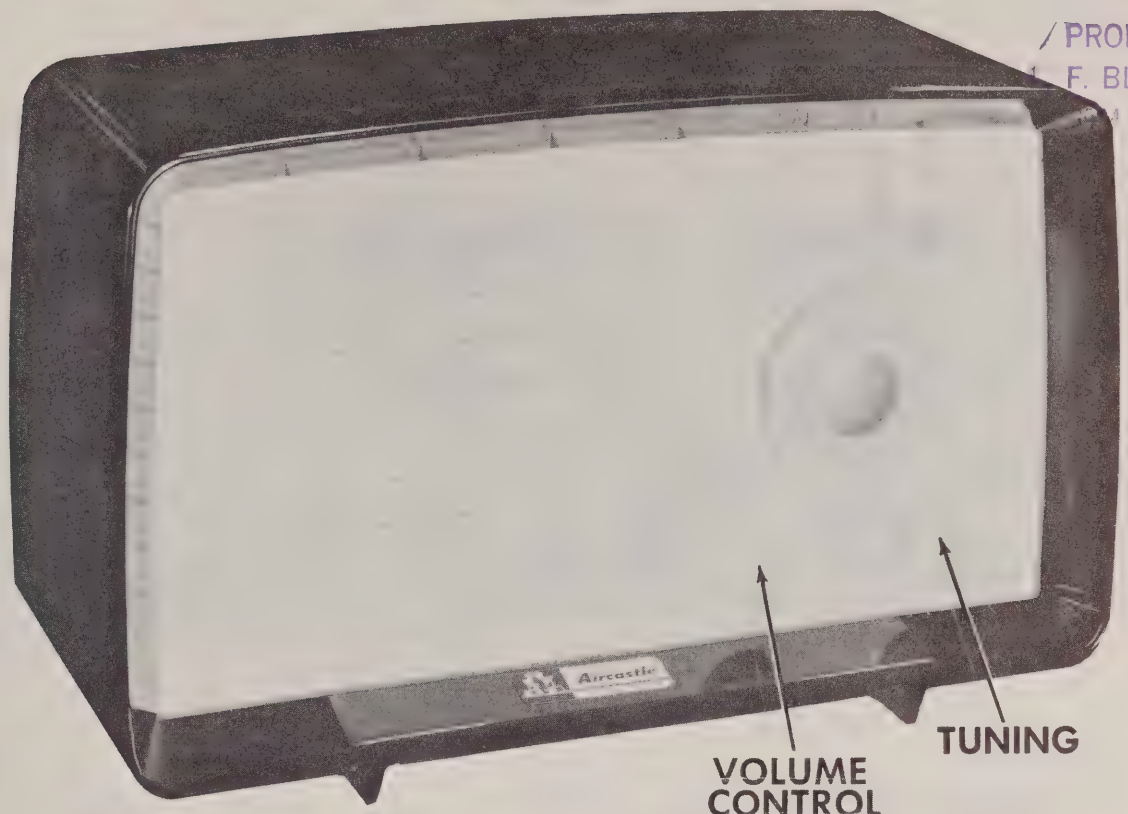
AIRCASTLE
MODELS 652.5T5E, V




AIRCASTLE
MODELS 652.5T5E, V

| | |
|---|---|
| TRADE NAME | Aircastle Models 652.5T5E, V |
| SUPPLIER | Spiegel, Inc., 1061 W. 35th. St., Chicago, 9, Ill. |
| TYPE SET | AC-DC Operated AM Superheterodyne Receiver |
| TUBES (Five) | Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier |
| POWER SUPPLY | 105-120 Volts AC-DC RATING .22 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535KC-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. With tuning gang fully closed set dial pointer 1/4" to left of low frequency index mark on cabinet.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis. | 455KC (400∿Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2. | | Loop | 1620KC | " | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver . Adjust for maximum output. |
| 3. | | " | 1400KC | Tune to 1400KC signal | " | A6 | " |

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DENVER, COLORADO

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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# PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 652.5T3E

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: AIRCASTLE PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | IF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V3 | Det.-AVC-AF Amp. | 12AT6 | 12AT6 | 7BT | |
| V4 | Output | 50C5 | 50C5 | 7CV | |
| V5 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: AIRCASTLE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 40 | 150 | CE1000 | PRS150/40-40-20 | | BBRT44215 | | TCT3116 | TVA-3451 | Red |
| B | 40 | 150 | | | | | | | | Blue |
| C | 20 | 150 | | | | | | | | Yellow |
| C2 | .05 | 400 | | P488-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C3 | 270 | | | SI270 | D6-271 | TP41 | GP2K-271 | UC-5327 | 5GA-T27 | |
| C4 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C5 | 270 | | | SI270 | D6-271 | TP41 | GP2K-271 | UC-5327 | 5GA-T27 | |
| C6 | .01 | 600 | | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C7 | 10000 | | | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C8 | .05 | 600 | | P688-05 | DF-503 | CUB6S5 | | PT615 | 6TM-S5 | |
| C9 | .1 | 400 | | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: AIRCASTLE PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ | ½ | VC-51 | Q13-133 | A47-500K-Z | BSK-60-S | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWE-12 | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AIRCASTLE PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 22KΩ | ½ | | BTS-22K | |
| R3 | 220Ω | 1 | | BTA-220 | Note 1 |
| R4 | 2.2Meg | ½ | | BTS-2.2Meg | |
| R5 | 4.7Meg | ½ | | BTS-4.7Meg | |
| R6 | 220KΩ | ½ | | BTS-220K | |

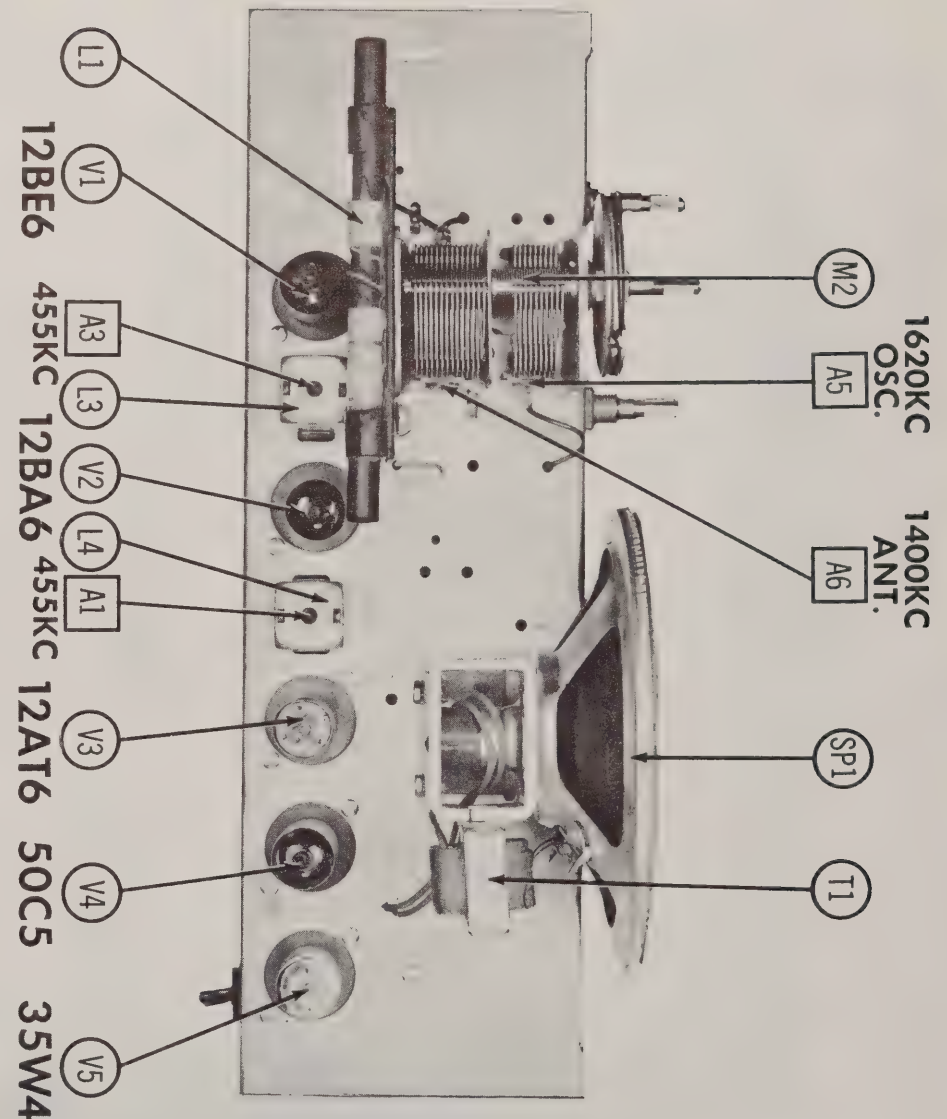
| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AIRCASTLE PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7 | 470KΩ | ½ | | BTS-470K | |
| R8 | 150Ω | 1 | | BTA-150 | |
| R9 | 2200Ω | 1 | | BTA-2200 | |
| R10 | 330Ω | 1 | | BTA-330 | |
| R11 | 15Ω | ½ | | BTS-15 | Note 2 |

Note 1. Some versions may use a 68Ω resistor in this application.
Note 2. Some versions may use a 18Ω resistor in this application.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE: PRI. | IMPEDANCE: SEC. | REPLACEMENT DATA: AIRCASTLE PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 2.7KΩ | 3.3Ω | | A-3332 | A-3025 | S-12X | Z1101 | 26S58 ① | ① Drill one new mounting hole. |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## SPEAKER

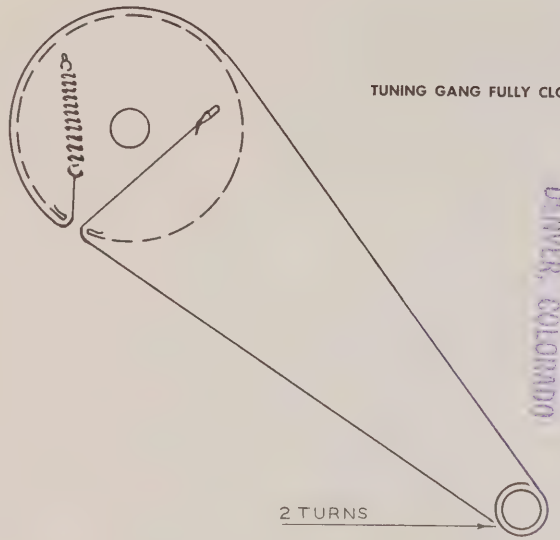
| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | AIRCASTLE PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 5" | PM | 3.3Ω | | ST-105 Mod. P5-X | 5A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | AIRCASTLE PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coil | .3Ω | | LP-FE11A | | | | |
| L2 | Osc. Coil | .5Ω | 5.5Ω | LC-10 | 14-1073 | | 69-Osc. | |
| L3 | Input IF | 20Ω | 20Ω | LF-24 | 16-6758 | BC-352 | 12-C1 | |
| L4 | Output IF | 20Ω | 20Ω | LF-24 | 16-6758 | BC-353 | 12-C2 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | AIRCASTLE PART No. | NOTES |
|---|---|---|---|
| M1 | Dial Light | C47 | #47, Bayonet, Not used in all versions |
| M2 | Tuning Cap. | CV21 | 33-456MMF, 27-190MMF |
| | Cabinet | CB-5T5E | Model 652.5T5E |
| | Cabinet | CB-5T5V | Model 652.5T5V |
| | Knob | KNV-5T5 | Volume-on-off |
| | Knob | KNT-5T5 | Tuning |




DIAL CORD STRINGING

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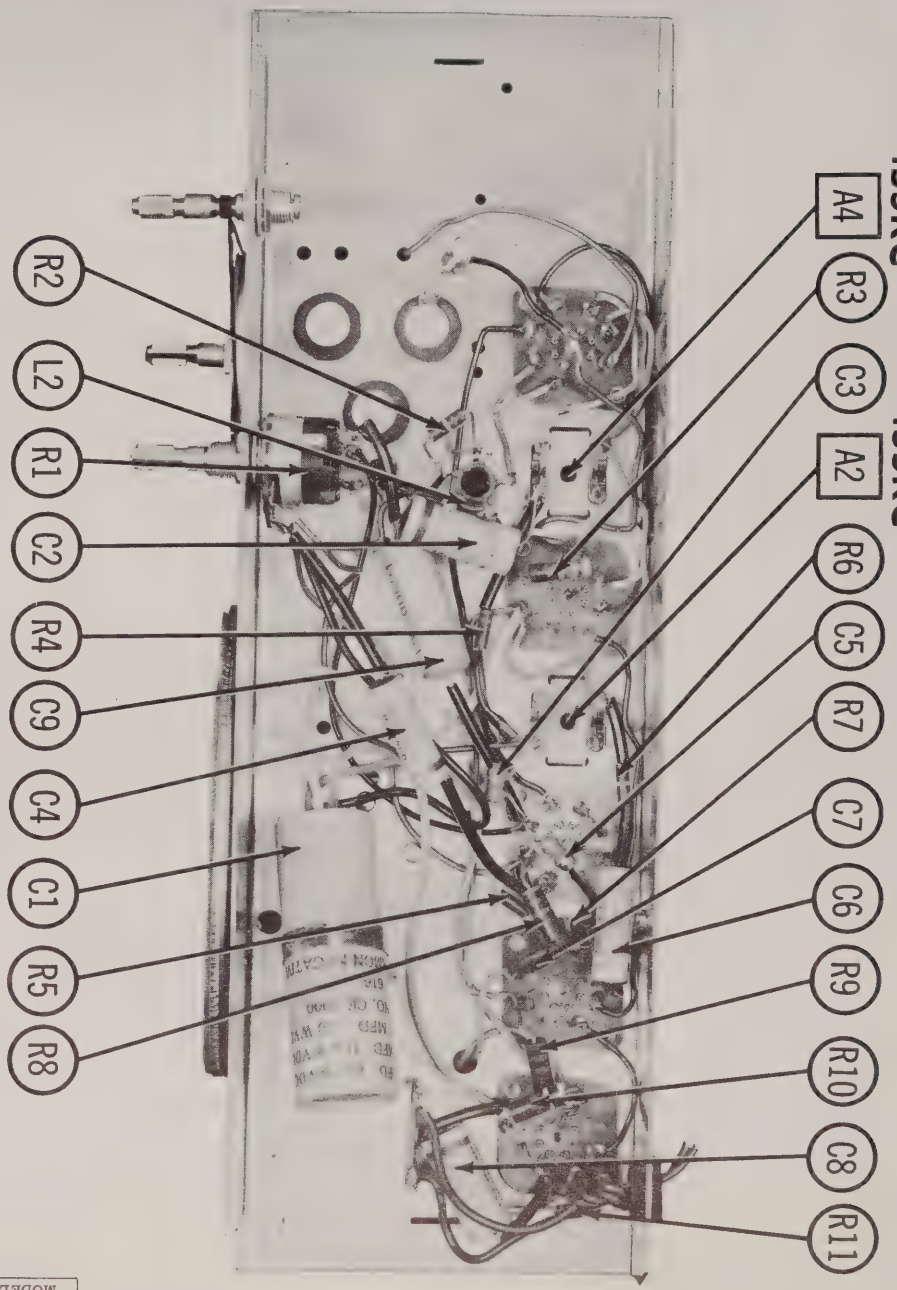
DENVER, COLORADO

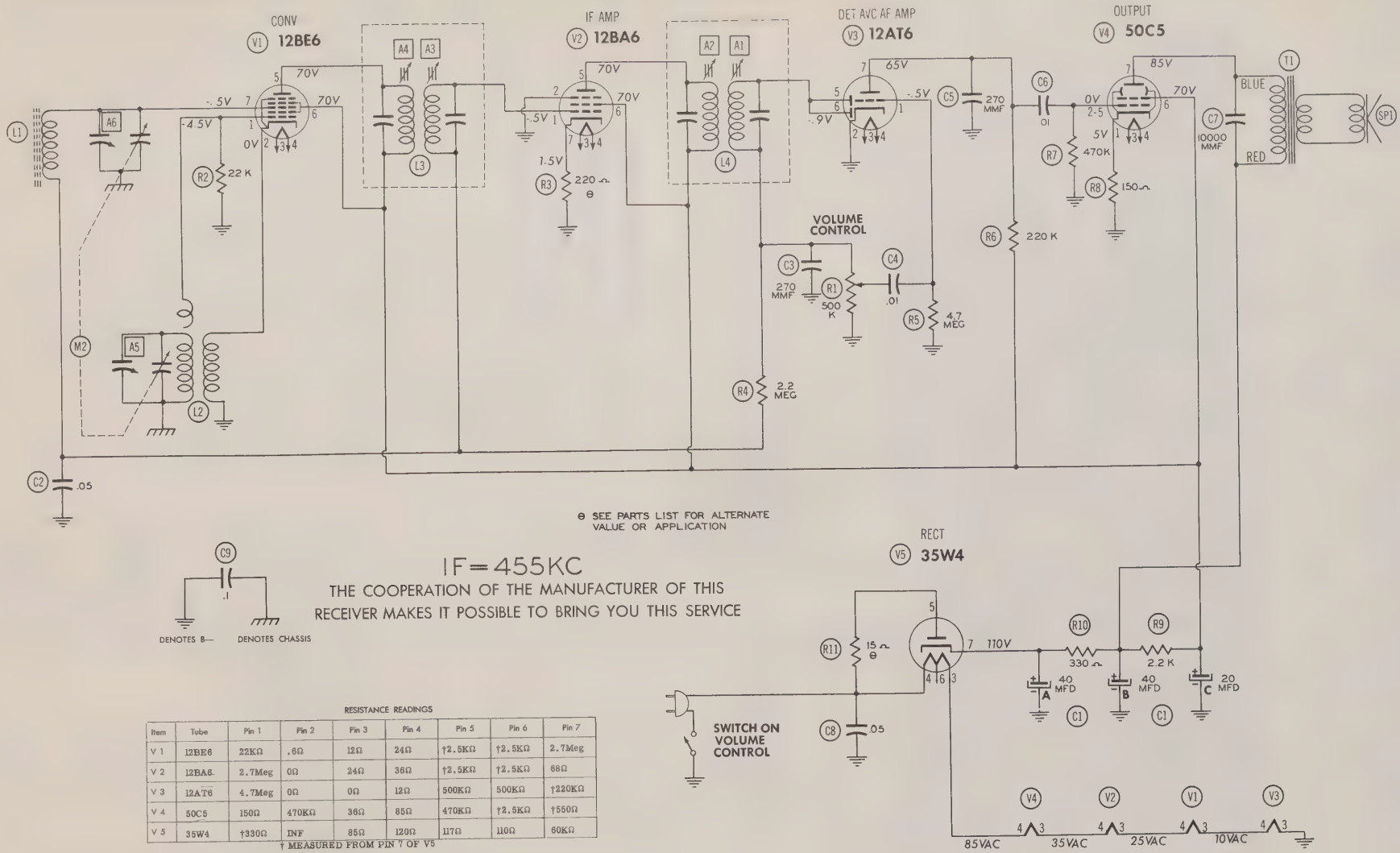
## CHASSIS—BOTTOM VIEW






AIRCASTLE MODEL 652.5T3E

AIRCASTLE MODEL 652.5T3E




θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 22KΩ | .6Ω | 12Ω | 24Ω | †2.5KΩ | †2.5KΩ | 2.7Meg |
| V 2 | 12BA6 | 2.7Meg | 0Ω | 24Ω | 36Ω | †2.5KΩ | †2.5KΩ | 68Ω |
| V 3 | 12AT6 | 4.7Meg | 0Ω | 0Ω | 12Ω | 500KΩ | 500KΩ | †220KΩ |
| V 4 | 50C5 | 150Ω | 470KΩ | 36Ω | 85Ω | 470KΩ | †2.5KΩ | †550Ω |
| V 5 | 35W4 | †330Ω | INF | 85Ω | 120Ω | 117Ω | 110Ω | 60KΩ |

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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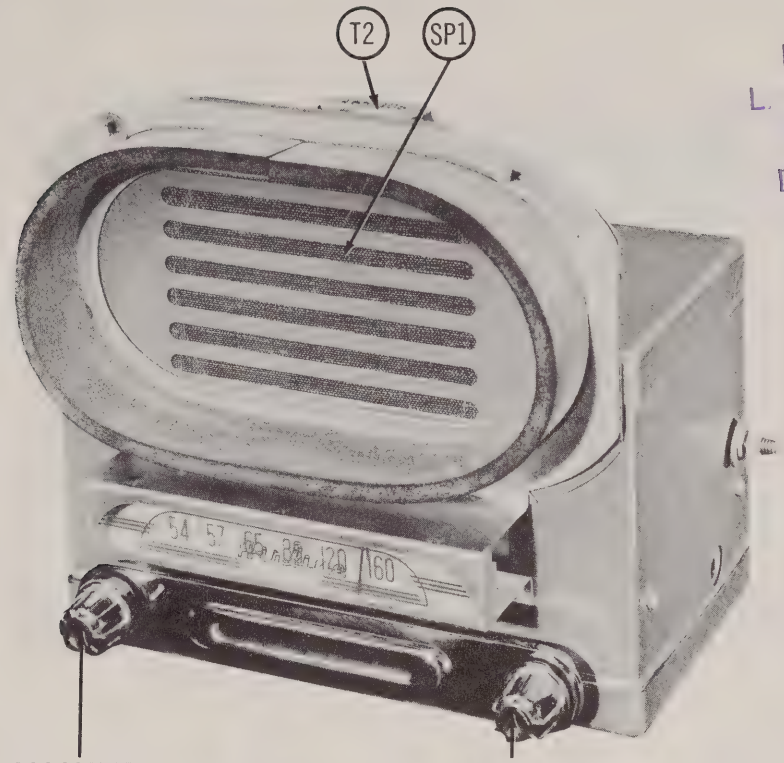
AIRLINE
MODEL 61-6789




AIRLINE
MODEL 61-6789

| | |
|---|---|
| TRADE NAME | Airline Model 61-6789 (For 1951, 1952 Chevrolet Automobiles) |
| SUPPLIER | Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill. |
| TYPE SET | Battery Operated Custom Built AM Superheterodyne Automobile Receiver |
| TUBES | Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 (or) 6AT6 Det. -AVC-AF Amp., 6AQ5 Output, 6X4 Rectifier, 6AU6 Trigger Amp. |
| POWER SUPPLY | 6 Volt Storage Battery — RATING 4.7 Amp. @ 6.3 Volts DC |
| TUNING RANGE—BROADCAST | 538-1600KC — SHORT WAVE |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Attenuate generator output to maintain 1.8 volts on output meter. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | .1MFD | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 455KC (400∿ Mod.) | 1600KC | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2 | " | " | 1600KC | " | " | A5 | " |
| 3 | 68MMF | High side thru 68MMF to antenna receptacle. Low side to chassis. | 1400KC | Tune to 1400KC signal. | " | A6, A7 | " |
| 4 | With radio installed in car and antenna fully extended tune in a weak station near 1400KC and adjust A7 for maximum volume. | | | | | | |

NOTE: In very weak signal areas, the electro-touch tuning motor may continue to run after the tuning bar has been released. If this occurs, switch the radio off, then back on and tune manually to the desired station.



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# PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 61-6789

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: AIRLINE PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amp. | 6BA6 | 6BA6 | 7BK | |
| V2 | Converter | 6BE6 | 6BE6 | 7CH | |
| V3 | IF Amp. | 6BA6 | 6BA6 | 7BK | |
| V4 | Det-AVC-AF Amp. | 6AV6 | 6AV6 | 7BT | 6AT6 used in some sets |
| V5 | Output | 6AQ5 | 6AQ5 | 7BZ | |
| V6 | Rectifier | 6X4 | 6X4 | 5BS | |
| V7 | Trigger Amp. | 6AU6 | 6AU6 | 7BK | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: AIRLINE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ▲20 | 350 | CE-86 | AFH3-107 | | C080 | | FP345. 8 | TVL-3739 | |
| B | ■20 | 350 | | | | | | | | |
| C | ▲20 | 25 | | | | | | | | |
| C2 | .047 | 200 | C503-2 | P288-047 | DF-503 | PJ2S47 | | PT4147 | 2TM-S47 | |
| C3 | 22 | | CC220 | SI22 | D6-220 | TP22 | NP0K-220 | UC-5422 | 5GA-Q22 | |
| C4 | 100 | | CC101 | SI100 | D6-101 | TP34 | GP1K-101 | UC-531 | 5GA-T1 | |
| C5 | 5 | | CC47 | SI5 | D6-050 | G011 | GP1K-050 | ZT-555 | 5GA-V5 | |
| C6 | 47 | | CM470 | SI47 | D6-470 | TP29 | GP1K-470 | UC-5447 | 5GA-Q47 | |
| C7 | 20 | | | SI20NP0 | TCZ-20 | TZ13 | NP0K-200 | ZT-542 | 5TCC-Q2 | |
| C8 | 75 | | | | | | | | | |
| C9 | .047 | 200 | C503-2 | P288-047 | DF-503 | PJ2S47 | | PT4147 | 2TM-S47 | |
| C10 | 200 | | | SI200 | D6-201 | TP38 | GP2K-201 | UC-532 | 5GA-T2 | Note 1 |
| C11 | . 01 | 600 | C103-6 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C12 | 200 | | | SI200 | D6-201 | TP38 | GP2K-201 | UC-532 | 5GA-T2 | Note 1 |
| C13 | . 01 | 600 | C103-6 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C14 | . 005 | 200 | C502-4 | P688-005 | D6-502 | CUB6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C15 | . 01 | 600 | C103-6 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C16 | . 01 | 600 | C103-6 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C17 | . 5 | 100 | C504-1 | VHC-36 | | PJ2P5 | | RF480 | HC-2 | |
| C18 | . 47 | 100 | C504-1 | VHC-36 | | PJ2P5 | | RF480 | HC-2 | |
| C19 | . 008 | 1600 | C802-16 | P1688-008 | | CUB16D8 | | PT1628 | MB-D8 | |
| C20 | . 047 | 200 | C503-2 | P288-047 | DF-503 | PJ2S47 | | PT4147 | 2TM-S47 | Note 2 |

Note 1: Some models may use a 220MMF in this applications.
Note 2: Not used in all models.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: AIRLINE PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 750KΩ with 15KΩ stop | ½ | RV-200 | | | B60-S * | U-51 * | Volume - Note |
| B | Shaft | | Not Req. | | | | EB214 | Attach to R1A |
| C | Switch | | Not Req. | | | | US-26 | Attach to R1A |

* Connect a 15KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down )

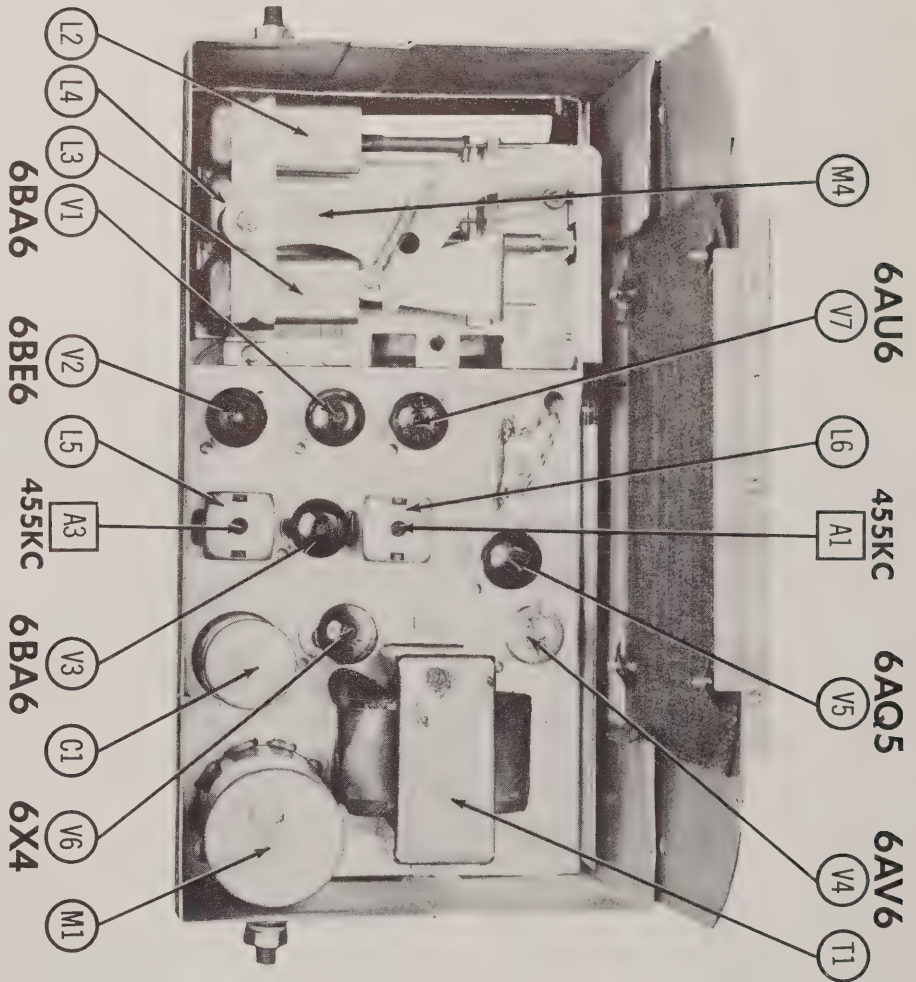
## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AIRLINE PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 470KΩ | ½ | R474 | BTS-470K | |
| R3 | 330Ω | ½ | R331 | BTS-330 | Note 1 |
| R4 | 10KΩ | ½ | R103 | BTS-10K | |
| R5 | 22KΩ | ½ | R223 | BTS-22K | |
| R6 | 1200Ω | ½ | | BTS-1200 | Note 2 |
| R7 | 22KΩ | 2 | R223-2 | BTB-22K | |
| R8 | 2.2Meg | ½ | | BTS-2.2Meg | Note 3 |
| R9 | 10Meg | ½ | R106 | BTS-10Meg | |
| R10 | 270KΩ | ½ | | BTS-270K | Note 4 |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: AIRLINE PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R11 | 470KΩ | ½ | R474 | BTS-470K | |
| R12 | 330Ω | ½ | R331 | BTS-330 | |
| R13 | 82Ω | ½ | R820 | BTS-82 | |
| R14 | 470KΩ | ½ | R474 | BTS-470K | |
| R15 | 270KΩ | ½ | | BTS-270K | Note 4 |
| R16 | 8200Ω | 1 | | BTA-8200 | Note 5 |
| R17 | 1000Ω | 1 | R102-1 | BTA-1000 | |
| R18 | 82Ω | ½ | | BTS-82 | Note 6 |
| R19 | 82Ω | ½ | | BTS-82 | Note 6 |

Note 1. Some models may use a 270Ω resistor in this application.
Note 2. Some models may use a 1500Ω resistor in this application.
Note 3. Some models may use a 2Meg resistor in this application.
Note 4. Some models may use a 250KΩ resistor in this application.
Note 5. Some models may use a 15KΩ resistor in this application.
Note 6. Some models may use a 100Ω resistor in this application.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (VIBRATOR)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | AIRLINE PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 6.3VCT @2A | 430VCT .046ADC | | | TV-100B | | P-2971 | V-16K | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | AIRLINE PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 5.1KΩ | 3.2Ω | Part of Spkr. PM-705 | A-3877 | A-2930 | S-3X | Z1001 | 24S51 | |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | AIRLINE PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 5 1/4" | PM | 3.2Ω | PM-705B | ST-803 Mod. P525-V | 52A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | AIRLINE PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. RF Choke | .7Ω | | L352 | 19-1004 | | 4610 | 8 Microhenries |
| L2 | Ant. Coil | 12Ω | | | | | | Part of tuning unit |
| L3 | RF Coil | 12Ω | | | | | | Part of tuning unit |
| L4 | Osc. Coil | 1Ω | 6Ω | | | | | Part of tuning unit |
| L5 | Input IF | 17Ω | 17Ω | 1655-16 | 16-6758 | BC-352 | 12-C1 | |
| L6 | Output IF | 17Ω | 17Ω | 1655-16 | 16-6758 | BC-353 | 12-C2 | |
| L7 | Fil. Choke | 0Ω | | L203 | | BC-537 | 5221 | 1.5 Microhenries |
| L8 | Vibrator Hash Choke | 0Ω | | L202A | | | 5221 | 17 Microhenries |

## VIBRATOR

| ITEM No. | TYPE | INPUT VOLTS | FREQUENCY | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | | | AIRLINE PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | RADIART PART No. | |
| M1 | Interrupter | 6.3V | 115∿ | V-83-A | 5301 | 859 | 5301 | |

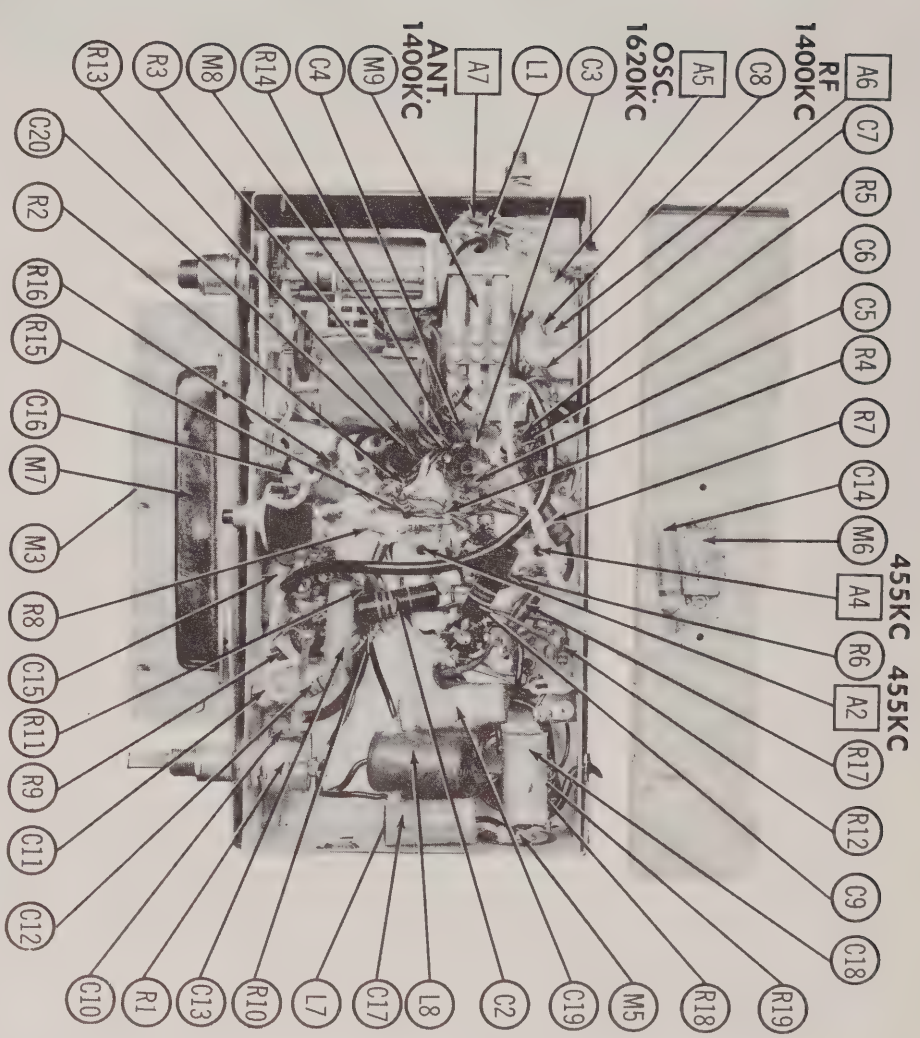
## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AIRLINE PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | SFE | 14A | A200 | FH226 | 307014 (14A-SFE) | 155014 | SFE-14 | HDI |

## MISCELLANEOUS

| ITEM No. | PART NAME | AIRLINE PART No. | NOTES |
|---|---|---|---|
| M3 | Dial Light | T47 | Bayonet #47 |
| M4 | Tuning Unit | TU-1000 | Permeability - includes M8, M9 |
| M5 | Spark Plate | | |
| M6 | Switch | SS-1 | Tone |
| M7 | Switch | SP-1 | Station Selector |
| M8 | Solenoid | TU1000-3 | Motor actuating |
| M9 | Relay | TU1000-4 | |
| A7 | Trimmer Cap. | TU1000-8 | Antenna |
| | Knob | H310E | Off-on-volume |
| | Knob | H310E | Tuning |
| | Dial Scale | D352 | |
| | Dial Pointer | PS352 | |
| | Motor | TU1000-2 | Tuning Drive |

## CHASSIS—BOTTOM VIEW




PROPERTY OF
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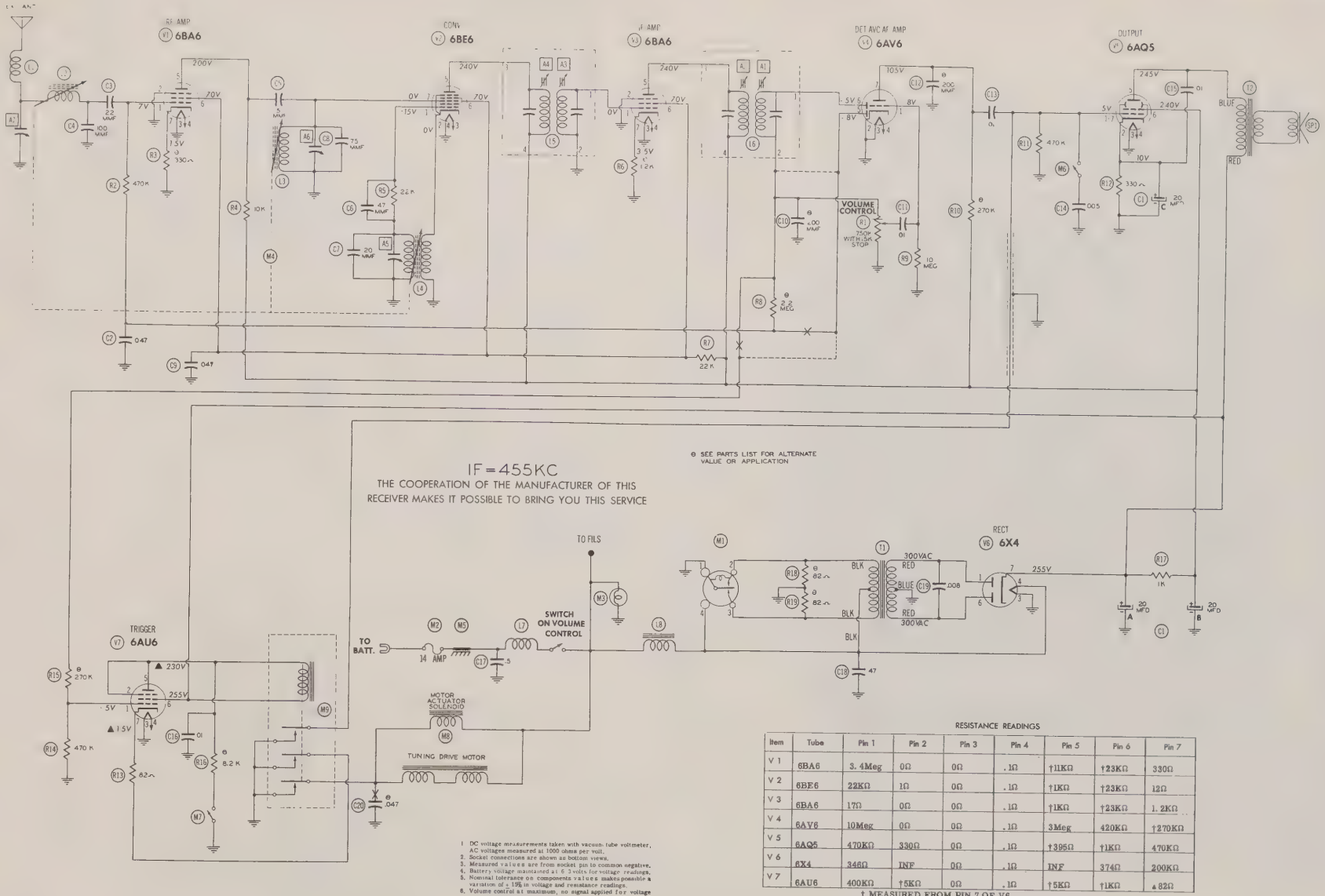
DENVER, COLORADO




IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum-tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 6BA6 | 3.4Meg | 0Ω | 0Ω | .1Ω | †11KΩ | †23KΩ | 330Ω |
| V 2 | 6BE6 | 22KΩ | 1Ω | 0Ω | .1Ω | †1KΩ | †23KΩ | 12Ω |
| V 3 | 6BA6 | 17Ω | 0Ω | 0Ω | .1Ω | †1KΩ | †23KΩ | 1.2KΩ |
| V 4 | 6AV6 | 10Meg | 0Ω | 0Ω | .1Ω | 3Meg | 420KΩ | †270KΩ |
| V 5 | 6AQ5 | 470KΩ | 330Ω | 0Ω | .1Ω | †395Ω | †1KΩ | 470KΩ |
| V 6 | 6X4 | 346Ω | INF | 0Ω | .1Ω | INF | 374Ω | 200KΩ |
| V 7 | 6AU6 | 400KΩ | †5KΩ | 0Ω | .1Ω | †5KΩ | †1KΩ | ▲82Ω |

† MEASURED FROM PIN 7 OF V6.
▲ MEASURED WITH RELAY CONTACTS CLOSED.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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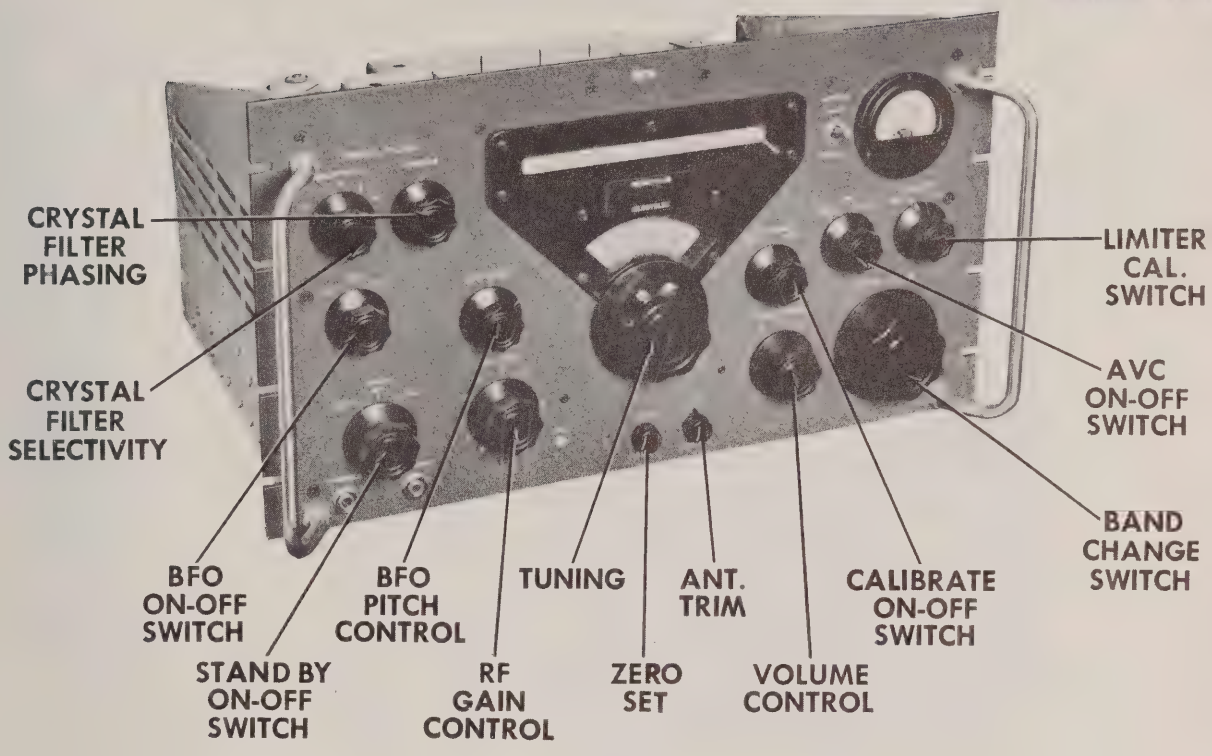
L. F. BLANKENSHIP
3694 MEADE ST
DENVER COLORADO

COLLINS
MODEL 51J-3

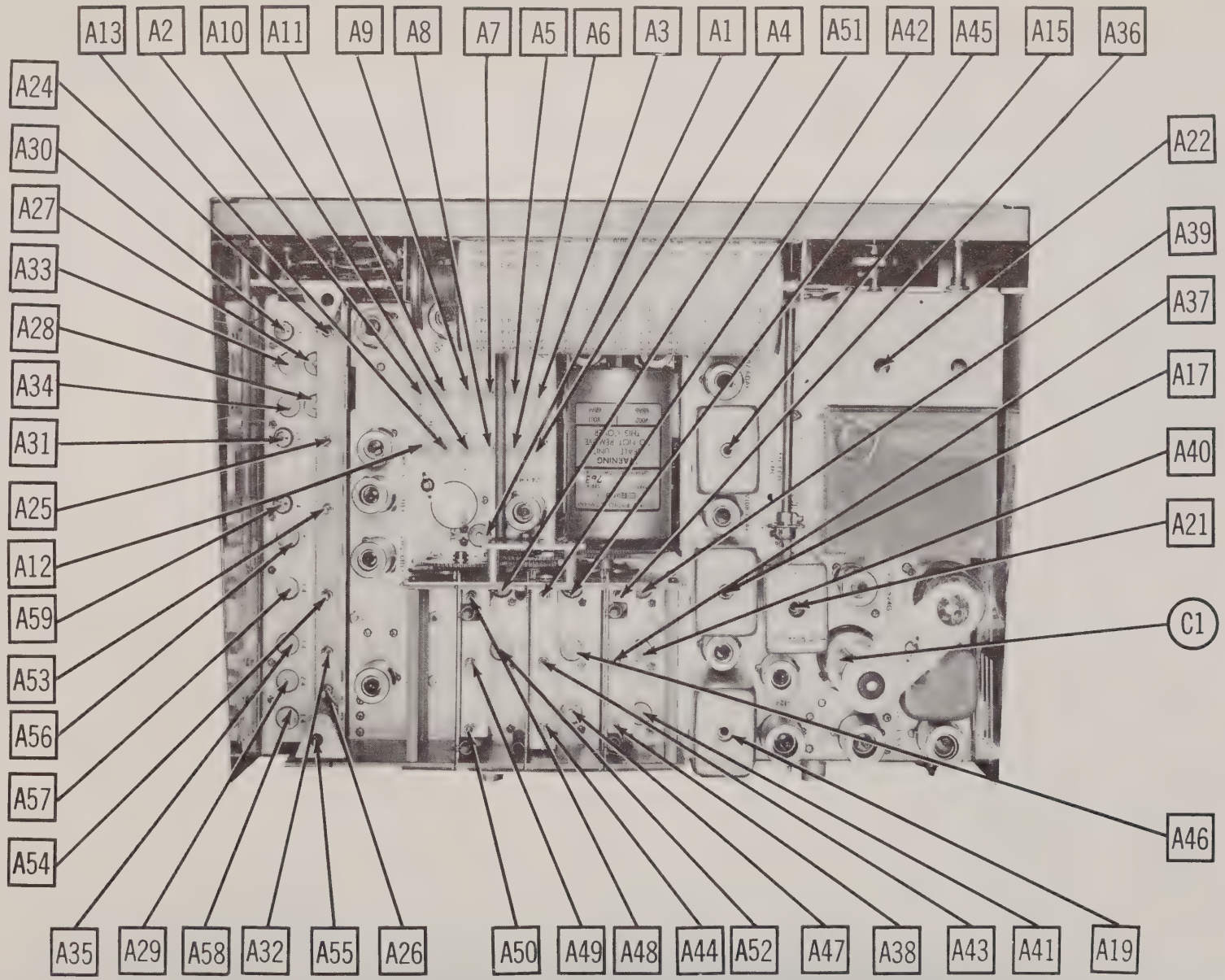



COLLINS
MODEL 51J-3

| | |
|---|---|
| TRADE NAME | Collins Model 51J-3 |
| MANUFACTURER | Collins Radio Co., Cedar Rapids, Iowa |
| TYPE SET | AC Operated Multi-Band AM Superheterodyne Communications Receiver |
| TUBES | Eighteen |
| POWER SUPPLY | 110-120, 220-240 Volts -45/75 Cycles RATING .82 Amp. @ 117 Volts AC |
| TUNING RANGE | 500KC-30.5MC |

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America




**CHASSIS TOP VIEW INDUCTOR AND ALIGNMENT IDENTIFICATION**

# ALIGNMENT INSTRUCTIONS

PROPERTY OF
L. F. BLANKENSHIP
3524 KING ST.
DENVER, COLORADO

## ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Alignment of this equipment should be attempted only by authorized and competent service personnell with proper test facilities.
Allow a 15 minute warm-up period for receiver and test equipment.
The following test equipment and alignment tools should be used:

a. 500KC to 30.5MC signal generator
b. DC vacuum tube voltmeter and oscilloscope
c. Two fiber or bakelite aligning tools having diameters of 1/8" and 5/16" and using screwdriver type bits.

## 100KC OSCILLATOR ALIGNMENT

(Pre-set CAL coarse frequency trimmer at mid-capacity front panel screwdriver adjustment located to left of zero ADJ knob.)
Use a secondary frequency standard and adjust A1 to calibrate the 100KC crystal oscillator.

## CRYSTAL OSCILLATOR TRIMMER ALIGNMENT

Set AVC to "on" position and calibrate to "off" position.
Note: The calibration oscillator may be used if a signal generator is not available. Set calibrate to "on" position and follow procedure outlined below. Using the "Kilocycle Knob" tune receiver to each alignment frequency until a peak reading is obtained on the input meter. Make the indicated adjustments but use the "input meter" on panel to indicate maximum readings.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | 2MMF | High side to pin 1 (grid) of 6AK5 (V1). Low side to chassis. | 29.5 MC (Unmod) | 30 | 29.5MC | DC probe thru 470KΩ to pin 7 (grid 3) of 6BE6 (V2). Common to chassis. | A3 | Preset A2 to MINIMUM capacitance. Adjust for maximum deflection if less than 2 volts is obtained at VTVM. If more than 2 volts deflection is obtained re-adjust (detune toward MINIMUM capacitance) until 2 volts deflection is obtained. |
| 2. | " | " | 27.5MC | 28 | 27.5MC | " | A4 | " |
| 3. | " | " | 25.5MC | 26 | 25.5MC | " | A5 | " |
| 4. | " | " | 23.5MC | 24 | 23.5MC | " | A6 | " |
| 5. | " | " | 21.5MC | 22 | 21.5MC | " | A7 | " |
| 6. | " | " | 19.5MC | 20 | 19.5MC | " | A8 | " |
| 7. | " | " | 17.5MC | 18 | 17.5MC | " | A9 | " |
| 8. | " | " | 15.5MC | 16 | 15.5MC | " | A10 | " |
| 9. | " | " | 13.5MC | 14 | 13.5MC | " | A11 | " |
| 10. | " | " | 1.5MC | 1 | 1.5MC | " | A12 | " |
| 11. | " | " | " | " | " | DC probe thru 470KΩ to pin 1 (grid 1) of 6BE6 (V4). Common to chassis. | A13 | Adjust for maximum deflection. |

## FIXED 500KC IF AMPLIFIER ALIGNMENT

Connect the signal generator to pin 7 (grid 3) of V5. Connect a clip lead to the cold side of C92 (output of crystal oscillator). Hold other end of clip lead near grid of V5. Set calibrate to "On" position and zero beat signal generator at 500KC. Set calibrate to "Off" position. Set selectivity to "O" position. Attenuate generator output to maintain not more than 3 volts of VTVM.
In step 19 the VFO pitch oscillator is aligned using a signal generator. An alternate method of alignment without a signal generator is as follows:

a. Disconnect antenna. Turn calibrate and BFO to "On" positions.
b. Tune to a 100KC check point on bands 2 or 3. For example: Tune receiver to 2.0MC.
c. If the "BFO Pitch" knob has never been removed from the shaft, rotate the knob until the line on the knob lines up with the line on the panel. If the knob has ever been removed from the shaft adjust A21 to produce a beat note. Turn BFO pitch knob to the right or left of the panel mark until the beat note reaches maximum pitch. The BFO pitch capacitor plates are now either fully closed or open. Loosen set screws on BFO pitch knob and turn knob until white line on knob is 90 degrees from panel mark. Tighten set screws and align mark on knob with mark on panel. The BFO pitch is now at mid-range.
d. Tune receiver 10KC off of any 0.1MC point on bands 2 or 3 and advance AUDIO GAIN until a constant pitch beat note is heard. If the constant pitch beat note is not audible adjust A21 until it is. To make sure that this is the correct note turn the kolocycle dial ±10KC and note whether the pitch of the note remains constant. This constant pitch beat note (on bands 2 and 3 only) is the result of a fifth harmonic from the 100KC oscillator that leaks into the IF strip and beats with the signal from the BFO. Due to the greater strength of the calibration beat note near a 100KC check point, this constant pitch beat note is most audible about mid-way between check points.
e. Adjust A21 for zero beat. The BFO frequency is now 500KC when the mark on the BFO pitch knob coincides with the mark on the panel.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 12. | .01MFD | High side to pin 7 (grid 3) of 6BE6 (V5). Low side to chassis. | 500KC | Any non-interfering position | Any | DC probe to point (A). Common to chassis. | A14 | Connect detuning net of .01MFD in series with 4700Ω to pin 5 (plate) of V8 and chassis. Adjust for maximum deflection. |
| 13. | " | " | " | " | " | " | A15 | Reconnect detuning net to pin 1 (grid) of V9. Adjust for maximum deflection. |
| 14. | " | " | " | " | " | " | A16 | Reconnect detuning net to pin 5 (plate) of V9. Adjust for maximum deflection. |
| 15. | " | " | " | " | " | " | A17 | Reconnect detuning net to terminal #4 of L27. Adjust for maximum deflection. |
| 16. | " | " | " | " | " | " | A18 | Reconnect detuning net to pin 5 (plate) of V10. Adjust for maximum deflection. |
| 17. | " | " | " | " | " | " | A19 | Reconnect detuning net for terminal #4 of V28. Adjust for maximum deflection. |
| 18. | " | " | " | " | " | " | A20 | Adjust for maximum deflection. |

19. If the BFO pitch knob has never been removed from the shaft, align the BFO as follows: Turn BFO to "On" position. Set mark on BFO pitch knob to coincide with mark on panel. Adjust A21 for zero beat.
If BFO pitch knob has ever been been removed from shaft, align BFO as follows: Turn BFO to "On" position. Adjust A21 to produce a beat note. Set BFO pitch knob so that mark on knob coincided with mark on cabinet, then turn knob either to right or left of the panel mark until a point where maximum pitch is obtained. The BFO pitch capacitor are now either fully open or fully closed. Loosen set screws in BFO pitch knob and turn knob on shaft until mark on knob is 90 degrees from panel mark. Tighten set screws. Turn knob so that its mark coincides with mark on panel. Adjust A21 for zero beat.

20. To align L25 use scope and FM signal generator having a sweep rate of 4 cycles per second, a frequency excursion of approximately 20KC and a carrier frequency between 1.5 and 3.5MC.
Set the mark on the phasing control knob to coincide with mark on panel. Set the phasing capacitor to its mid-range position as follows: Look into right hand hole in top of crystal filter cover (use flash light) in order to see phasing capacitor plates. Rotate phasing control until rotor plates completely mesh with the stator plates. Loosen set screws in phasing control knob and turn knob so that its mark is 90 degrees to the left of the panel mark. Tighten set screws and rotate knob until marks coincide the phasing capacitor is now at its mid-range position.
Switch Selectivity to position "1". Turn AVC, Limiter, BFO and Calibrate to "Off" positions.

# ALIGNMENT INSTRUCTIONS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 21. | .01MFD | High side to pin 7 (grid 3) of 6BE6 (V5). Low side to chassis. | 2.5MC (20KC Swp) | 2 | See Remarks | Vert. Amp. to point (B). Low side to chassis. | A22 | Turn RF gain to mid-range and synchronize scope. If two symmetrical peaks (each peak is an IF response curve) do not appear on scope, adjust receiver tuning, RF gain and scope controls until they do. Turning phasing control to left should cause rejection notch to appear at one side of each peak. If notch does not appear set phasing control approximately 1/8 turn to left of center and adjust A22 until a well defined notch appears on scope pattern. Adjust until no evidence of damped oscillation remains. Turn phasing control approximately 1/8 turn to the right of center. The rejection notch should appear on opposite side of each peak. If the notch is not well defined with no evidence of damped oscillation SLIGHTLY retouch A22. Repeat step 21 until a symmetrical notch with no evidence ot damped oscillation appears on both sides of the response curve as outlined above. |

## 500KC IF PERFORMANCE MEASUREMENTS

SENSITIVITY - An input signal of 25 to 40 microvolts at pin 7 (grid) of V5 should produce 4 volts on VTVM at point (B)

SELECTIVITY -

1. Alternate signal generator for 4 volts at point (B). Use voltage at point (B) and output level of signal generator as reference voltages.
2. Increase signal generator output 6DB (double the voltage). The band width may be determined by noting how far on either side of resonance the generator signal must be detuned to lower the voltage at point (B) to 4 volts.
3. Repeat procedure in step 2 for 60DB increase (1000 times the signal input voltage level).
4. The overall selectivity specifications are:
   a. Minimum selectivity

| | | |
|---|---|---|
| 6DB | 5.5KC Min. | 6.5KC Max. |
| 60DB | 17.0KC Min. | 20.0KC Max. |

   b. Maximum selectivity (crystal filter in)

| | | |
|---|---|---|
| 6DB | 0.2KC Min. | 0.3KC Max. |
| 60DB | 0.2KC Min. | 12.0KC Max. |

## ALIGNMENT OF DIALS WITH VFO

A. MEGACYCLE DIAL POINTER - If the dial pointer has been accidentally slipped along the dial cord then reset pointer as follows: Remove the escutcheon plate; turn the kilocycle knob counter clockwise until it reaches the mechanical stop. Then turn it clockwise until the zero-zero mark lines up with the fiducial mark. Turn the kilocycle knob exactly 5 turns clockwise. Slide the megacycle pointer along the dial cord to the center frequency of the band. For example: 2.0MC is the exact center of band 2.

B. KILOCYCLE DIAL - If the kilocycle dial reading is incorrect it will be necessary to determine the magnitude and direction of the errors first. To do this, set the receiver on band 2. Set kilocycle fiducial line to the center mark on the escutcheon opening by rotating zero adjustment knob. Set mark on BFO pitch knob to coincide with mark on panel (this sets BFO at 500KC as outlined in step 19). Set calibrate to "On" position. Rotate kilocycle knob to zero beat. Note magnitude and direction of error in kilocycle dial reading. Tune receiver to 2.5MC. Leave BFO pitch knob set at 500KC and rotate kilocycle knob to point of zero beat. Again, note magnitude and the direction of error in the kilocycle dial reading.

1. If kilocycle dial reading is incorrect by less than 3KC in the same direction by equal amount at both ends of the megacycle dial correct as follows:
   a. Make certain BFO pitch knob is set at 500KC.
   b. Tune the receiver for zero beat at the 100KC check point nearest the dial setting for which maximum accuracy is desired. For example: If maximum accuracy is desired at 1.83MC, tune for zero beat at 1.8MC by rotating the kilocycle knob.
   c. Set kilocycle fiducial line to zero-zero on kilocycle dial by rotating zero adjustment knob.
2. If the kilocycle dial reading is incorrect by more than 3KC in the same direction by an equal amount at both ends of the megacycle dial, correct as follows:
   a. Check to see that BFO pitch knob is set at 500KC.
   b. Tune to zero beat at 1.5MC.
   c. Set kilocycle fiducial line to middle index mark on escutcheon opening by rotating zero adjustment knob.
   d. Loosen the set screws in circular kilocycle dial and set to zero-zero. Tighten set screws.
3. If the two errors in kilocycle dial reading are either opposite in direction or vary in size, it indicates that the VFO end points have shifted. Correct as follows:
   a. Check to see that BFO pitch knob is set at 500KC then tune receiver to zero beat at 1.5MC on band 2.
   b. If the zero mark on kilocycle dial lies within the lines on escutcheon opening, set kilocycle fiducial line to zero-zero on the kilocycle dial by rotating the zero adjustment knob.
   c. If the zero-zero mark falls outside the lines on the escutcheon opening, loosen set screws in the kilocycle dial. Set fiducial mark to the center line in the escutcheon opening. Turn kilocycle dial until zero-zero mark coincides with the fiducial. Tighten set screws.
   d. Turn kilocycle knob approximately 10 turns counter clockwise to zero beat. This procedure should tune the receiver to 2.5MC.
   e. At this point note the error in the kilocycle dial reading.
   f. If this error is less than ±3KC, set the fiducial to 2.5MC by rotating the zero adjustment knob. This establishes the point of maximum accuracy at 2.5MC. If maximum accuracy is desired at some other point in the band, the receiver may be tuned to zero beat at the desired check point. Then adjust fiducial to zero-zero on the kilocycle dial.
   g. If the error is more than ±3KC refer to VFO alignment.

C. VFO FREQUENCY CHECK - The VFO frequency should be checked against a known source to determine if the VFO shaft has been displaced a full turn, thereby shifting the VFO frequency exactly 100KC. Use a signal generator having an accuracy of ±1% or ±20KC or another 51J-3 receiver known to be properly aligned, and check as follows:

1. Set BFO pitch knob at 500KC and turn calibrate to "Off" position.
2. If signal generator is used, connect high side to pin 7 (grid 3) of 6BE6 (V5). Low side to chassis. Set generator to 2.0MC. Tune receiver for zero beat at 2.0MC. If the VFO shaft is displaced a full turn, zero beat should occur within 20KC of 1.9MC or 2.1MC instead of 2.0MC:
3. If an accurately aligned 51J-3 test receiver is used couple the antenna jack of the test receiver to the output of the VFO to be checked. Set BFO pitch of test receiver at 500KC. Switch calibrate to "On" position in test receiver. Tune the receiver containing VFO to be checked to 2.0MC. Tune test receiver to zero beat at 2.5MC. If the shaft of the VFO being checked is displaced a full turn, zero beat should occur at 2.4MC or 2.6MC instead of 2.5MC.
4. If steps 2 or 3 indicate that the VFO shaft has been displaced a full turn, correct as follows:
   a. Connect a clip lead from pin 7 (grid 3) of 6BE6 (V5) to the cold side of C92 (100KC oscillator output). Turn calibrate to "On" position. Set BFO pitch at 500KC and tune receiver to zero beat at 2.5MC. Loosen set screws in VFO coupler.
   b. If zero beat occured at 2.1MC instead of at 2.0MC in step 2 or at 2.4MC instead of at 2.5MC in step 3 the VFO frequency is 100KC lower than it should be. Correction can be made by turning VFO shaft one full turn counter clockwise to zero heat.
   c. If zero beat occured at 1.9MC in step 2 or at 2.6MC in step 3 the VFO frequency is 100 KC higher than it should be. Correction can be made by turning VFO shaft one full turn clockwise to zero beat.
   d. Tighten set screws in VFO shaft coupler.

## VARIABLE IF ALIGNMENT

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A)

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 22. | 47Ω Resistor in series with 100MMF capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 1.6MC (Unmod) | 2 | 1.6MC | DC probe to point (A). Common to chassis. | A24,A25 A26 | Set A23 (Ant.trim.) to its mid-range position. Turn BFO to "On" position and adjust generator to zero beat at 1.6MC. Turn BFO to "Off" position. Adjust A24, A25 and A26 for maximum deflection. |
| 23. | " | " | 2.4MC | " | 2.4MC | " | A27,A28 A29 | Turn BFO to "On" position and adjust generator to zero beat at 2.4MC. Turn BFO to "Off" position. Adjust A27, A28 and A29 for maximum deflection. Repeat steps 22 and 23 until maximum deflection is obtained on VTVM. |

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# ALIGNMENT INSTRUCTIONS (cont)

RF ALIGNMENT BAND 3

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A)

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 24. | 47Ω Resistor in series with 100MMF capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 2.6MC | 3 | 2.6MC | DC probe to point (A). Common to chassis. | A30 A31 A32 | Turn BFO to "on" position and adjust generator to zero beat at 2.6MC. Turn BFO to "off" position. Adjust for maximum deflection. |
| 25. | " | " | 3.4MC | " | 3.4MC | " | A33 A34 A35 | Turn BFO to "on" position and adjust generator to zero beat at 3.4MC. Turn BFO to "Off" position. Adjust for maximum deflection. Repeat steps 24 and 25 until maximum deflection is obtained on VTVM. |

RF ALIGNMENT BANDS 4-7

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A).

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 26. | 47Ω Resistor in series with 100MMF capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 4.0MC (Unmod) | 4 | 4.0MC | DC probe to point (A). Common to chassis. | A36 A37 A38 | Turn BFO to "on" position and adjust generator to zero beat at 4.0MC. Turn BFO to "off" position. Adjust for maximum deflection. |
| 27. | " | " | 7.0MC (Unmod) | 7 | 7.0MC | " | A39 A40 A41 | Turn BFO to "on" position and adjust generator to zero beat at 7.0MC. Turn BFO to "off" position. Adjust for maximum deflection. Repeat steps 26 and 27 until maximum deflection is obtained on VTVM. |

RF ALIGNMENT BANDS 8-15

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A)

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 28. | 47Ω Resistor in series with 100MMF capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 8.0MC | 8 | 8.0MC | DC probe to point (A). Common to chassis. | A42 A43 A44 | Turn BFO to "on" position and adjust generator to zero beat at 8.0MC. Turn BFO to "off" position. Adjust for maximum deflection. |
| 29. | " | " | 15.0MC | 15 | 15.0MC | " | A45 A46 A47 | Turn BFO to "on" position and adjust generator to zero beat at 15MC. Turn BFO to "off" position. Adjust for maximum deflection. Repeat steps 28 and 29 until maximum deflection is obtained on VTVM. |

RF ALIGNMENT BANDS 16-30

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A)

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 30. | 47Ω Resistor in series with 100MMF Capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 16.0MC | 16 | 16.0MC | DC probe to point (A). Common to chassis. | A48 A49 A50 | Turn BFO to "on" position and adjust signal generator to zero beat at 16.0MC. Turn BFO to "off" position. Adjust for maximum deflection. |
| 31. | " | " | 30.0MC | 30 | 30.0MC | " | A51 A52 | Turn BFO to "on" position and adjust signal generator to zero beat at 30.0MC. Turn BFO to "off" position. Adjust for maximum deflection. Repeat steps 30 and 31 until maximum deflection is obtained on VTVM. |

RF ALIGNMENT BAND 1

Attenuate signal generator output to maintain less than 5 volts on VTVM at point (A)

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 32. | 47Ω Resistor in series with 100MMF capacitor | High side thru dummy to antenna receptacle. Low side to chassis. | 0.6MC | 1 | 0.6MC | DC probe to point (A). Common to chassis. | A53 A54 A55 A56 | Turn BFO to "on" position and adjust generator to zero beat at 0.6MC. Turn BFO to "off" position. Adjust A53 so that core is in approximately same position as A24 and A25. Adjust A54, A55 and A56 for maximum deflection. Two peaks may be found when adjusting A56. The correct peak will occur at a greater capacitance value. Adjust in a counter clockwise direction to increase capacitance. |
| 33. | " | " | 1.4MC | " | 1.4MC | " | A57 A58 A59 | Turn BFO to "on" position and adjust generator to zero beat at 1.4MC. Turn BFO to "off" position. Adjust for maximum deflection. Repeat steps 32 and 33 until maximum deflection is obtained at VTVM. |

VFO ALIGNMENT (GENERAL)

If the VFO unit becomes sufficiently misaligned as indicated by the procedure outlined under "Alignment of Dials With VFO", paragraph B3, the unit should be returned to the factory for permanent alignment. Temporary alignment may be attempted by a qualified technician only in case of emergency

CAUTION: Do not, under any circumstances, remove the outer cylindrical cover. To do so will break the hermatic seal and expose the frequency corrector mechanism and the carefully compensated frequency-determining elements.

If the VFO is to be returned to the factory see instructions under "Complete VFO Removal".

# ALIGNMENT INSTRUCTIONS (cont)

VFO ALIGNMENT PROCEDURE

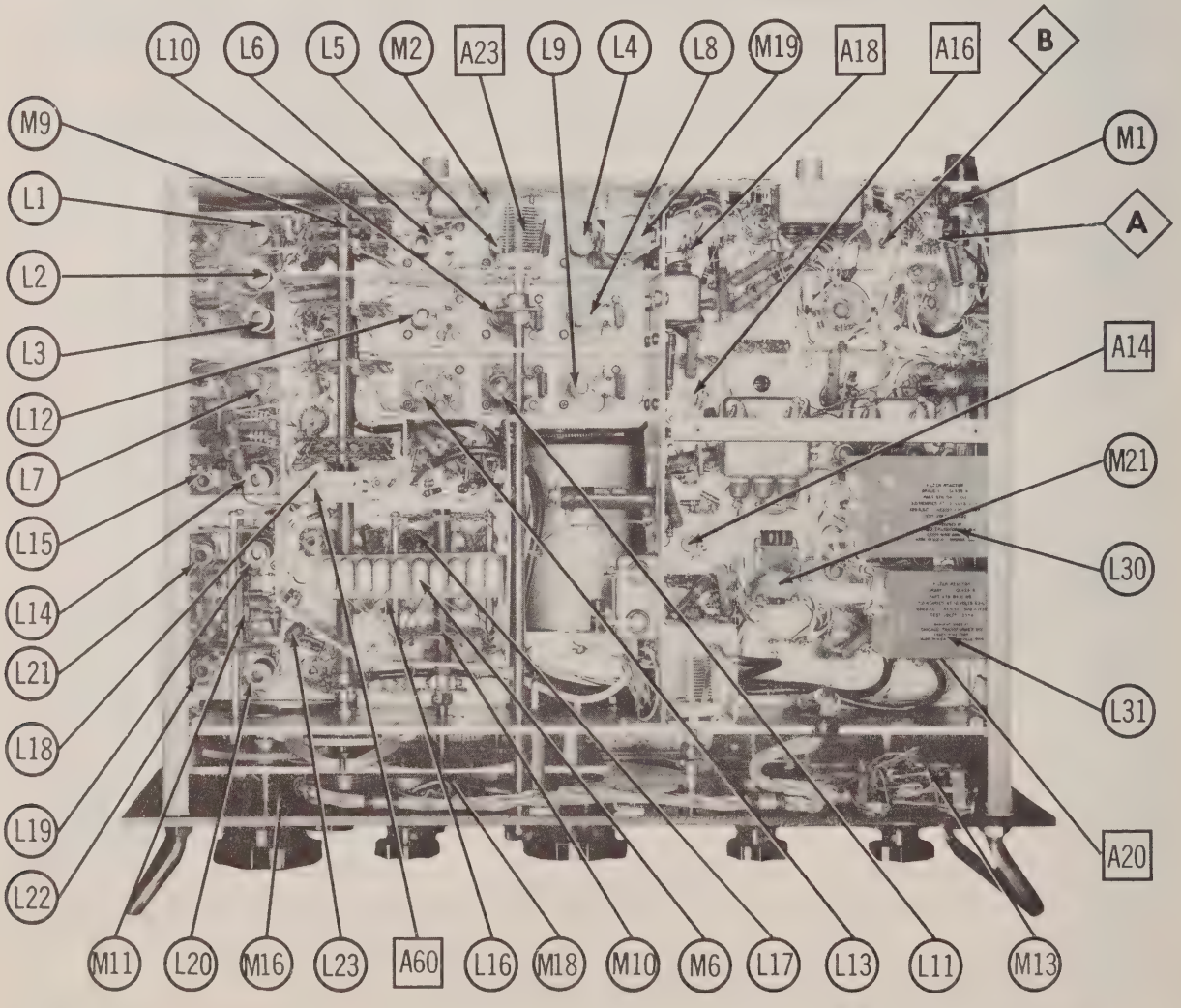
1. Set the BFO pitch line so that the white lines coincide (when lines coincide, BFO is set at 500KC). Turn calibrate to "Off" position.
2. A signal generator with an accuracy of ±20KC at 1. 5MC should be used.
3. Loosen set screws in VFO coupler and slide coupler hubs apart. Remove front panel of receiver and VFO mounting screws. Pull out the VFO and allow it to hang on the connecting wires. Fabricate a small circular dial having a linear scale from 0 to 100 completely around its outer edge. Mount the dial on the VFO shaft. Attach a small wire (use as pointer) to one of the VFO mounting screws. Let one division on the dial equal one kilocycle.
4. Turn the set on and short antenna terminal to chassis. Since none of receivers tuned circuits are used in this alignment it will not be necessary to set the receiver dials.
5. Couple the signal generators 1. 5MC output to pin 1 (grid 1) of 6BE6 (V5).
6. Locate the low frequency end point (2. 0MC) of the VFO by rotating the VFO shaft clockwise to the last zero beat obtainable in that direction. (Do not try to force VFO shaft after it reaches the stop at either end of its range. )
7. The VFO is now within 20KC of its 2. 0MC setting. To adjust more accurately, remove the signal generator and connect a clip lead from the cold side of C92 (100KC oscillator output) to pin 1 (grid 1) of 6BE6 (V5). Turn calibrate to "On" position. Carefully turn VFO shaft to the nearest zero beat. The VFO is now set to exactly 2. 0MC. Place the VFO dial pointer at zero using care to retain the zero beat setting
8. Turn the VFO shaft exactly 10 turns counter clockwise. Locate zero beat by turning the VFO shaft a few divisions toward either side of the 10-turn mark.
9. Should zero beat occur on either side of the 10-turn mark, note the amount and direction of error by counting divisions between zero and pointer. Multiply the number of error divisions by 1. 5.
10. Should zero beat occur at less than 10 turns, turn the VFO shaft counter clockwise by the number of divisions arrived at in step 9.
11. Should zero beat occur at more than 10 turns, turn the VFO shaft clockwise by the number of divisions arrived at in step 9.
12. Remove the hex plug from the front of oscillator. With the VFO adjustment tool (supplied with equipment) loosen the lock nut which becomes visible when hex plug is removed. Insert the screwdriver end of the adjustment tool into outer portion. Adjust trimmer screw until zero beat is again obtained. Tighten lock nut using care to retain zero beat.
13. The 2. 0 and 3. 0MC zero beat positions should now be exactly 10 turns apart. If this is not so, repeat the above procedure until they are. It will be necessary to zero dial pointer at initial zero beat position each time this procedure is repeated. Tighten lock-nut after each trimmer adjustment.
14. After the 2 and 3MC endpoints of the VFO have been separated by exactly 10 turns, replace the hex plug, put the VFO in the receiver and replace the front panel. Align the receiver dials with the VFO as outlined in paragraph B2 in "Alignment of Dials With VFO".

4MC BAND SUPPRESSION COIL ADJUSTMENT

Turn BFO to "On" position and tune in spurious signal at 1250KC. Adjust A60 for maximum attenuation of spurious signal.

COMPLETE VFO REMOVAL

A. Remove front panel and let it swing forward on the wires.
B. Loosen set screws in flexible coupler. Pull coupler apart and remove center disc.
C. Identify the VFO connecting wire so they may be reconnected correctly. Unsolder wires.
D. Remove the three retaining screws that hold VFO to chassis.
E. Slip the VFO back and tip the rear downward.
F. The VFO may now be pulled from the receiver.




CHASSIS BOTTOM VIEW-INDUCTOR & ALIGN. IDENTIFICATION

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | COLLINS PART No. | STANDARD REPLACEMENT | | |
| V1 | RF Amplifier | 6AK5 | 6AK5 | 7BD | |
| V2 | lst. Mixer | 6BE6 | 6BE6 | 7CH | |
| V3 | HF Crystal Osc. | 6AK5 | 6AK5 | 7BD | |
| V4 | Band 1 Mixer | 6BE6 | 6BE6 | 7CH | |
| V5 | Band 2 Mixer | 6BE6 | 6BE6 | 7CH | |
| V6 | Oscillator | 6BA6 | 6BA6 | 7BK | |
| V7 | Buffer | 6BA6 | 6BA6 | 7BK | |
| V8 | lst. IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V9 | 2nd. IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V10 | 3rd. IF Amplifier | 6BA6 | 6BA6 | 7BK | |
| V11 | Detector - AVC Rectifier | 12AX7 | 12AX7 | 9A | |
| V12 | BFO | 6BA6 | 6BA6 | 7BK | |
| V13 | AVC Amplifier - IF Output | 12AU7 | 12AU7 | 9A | |
| V14 | Limiter - AF Amplifier | 12AX7 | 12AX7 | 9A | |
| V15 | AF Output | 6AQ5 | 6AQ5 | 7BZ | |
| V16 | Calibration Osc. | 6BA6 | 6BA6 | 7BK | |
| V17 | Rectifier | 5V4G | 5V4G | 5L | |
| V18 | Voltage Regulator | 0A2 | 0A2 | 5B0 | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | COLLINS PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | 35 | 450 | 184500000 | AEP88J | | QC4445 | | | PE2764 | Note 1 |
| B | 35 | 450 | | | | | | | | Note 1 |
| C2 | 20 | 150 | 184650900 | BT350/20 | | CE63C200J | | BS45 | R1491 | |
| C3 | 20 | 150 | 184650900 | BT350/20 | | CE63C200J | | BS45 | R1491 | |
| C4 | 8 | 350 | 184651500 | BT350/8 | | CE63C080P | | | R1490 | |
| C5 | 100 | | 916405900 | SI100N750 | TCN-100 | TN22 | N750L-101 | NT-531 | 5TCU-T1 | |
| C6 | 51 | | 916429400 | | TCN-51 | TN15 | N750K-510 | | | |
| C7 | 36 | | 916444800 | | TCZ-36 | TZ19 | NP0L-360 | | | |
| C8 | 22 | | 916442400 | SI22NP0 | TCZ-22 | TZ14 | NP0K-220 | | 5TCC-Q22 | |
| C9 | 10 | | 916440600 | SI10NP0 | TCZ-10 | TZ09 | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C10 | 5 | | 916438500 | SI5NP0 | TCZ-4.7 | T Z07 | NP0K-050 | ZT-555 | 5TCCB-V47 | |
| C11 | 100 | | 916405900 | SI100N750 | TCN-101 | TN22 | N750L-101 | NT-531 | 5TCU-T1 | |
| C12 | 24 | | 916442800 | | | | | | | |
| C13 | 800 | 500 | | | | | | MCE251 | | Note 2 |
| C14 | 390 | 500 | | | | | | | | Note 3 |
| C15 | 220 | 500 | 912051700 | | | | | | | |
| C16 | 130 | 500 | 912050300 | | | 22R5T13 | | | | |
| C17 | 20 | 500 | 912044300 | 1469-00002 | | 22R5Q2 | | | MS-42 | |
| C18 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCE235 | MS-31 | |
| C19 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C20 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C21 | 1 | | 916436800 | SI1NP0 | TCZ-1 | TZ03 | NP0K-010 | | 5TCCB-V1 | |
| C22 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C23 | 2 | | 916437300 | SI2NP0 | TCZ-2 | TZ05 | NP0K-020 | ZT-552 | 5TCCB-V2 | |
| C24 | 910 | 500 | 935501500 | | | | | | | |
| C25 | 1.5 | | 916437000 | SI1.5NP0 | TCZ-1.5 | TZ04 | NP0K-1R5 | ZT-5515 | 5TCCB-V15 | |
| C26 | 200 | 500 | | | | | | MCE237 | | Note 4 |
| C27 | 200 | 500 | | | | | | MCE237 | | Note 4 |
| C28 | 62 | 500 | | | | | | | | Note 5 |
| C29 | 62 | 500 | | | | | | | | Note 5 |
| C30 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C31 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C32 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C33 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C34 | 20 | | 916442000 | SI20NP0 | TCZ-20 | TZ13 | NP0K-200 | ZT-542 | 5TCC-Q2 | |
| C35 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCE235 | MS-31 | |
| C36 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C37 | 15 | | 916441200 | SI15NP0 | TCZ-15 | TZ11 | NP0K-150 | ZT-5415 | 5TCC-Q15 | |
| C38 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCE235 | MS-31 | |
| C39 | 200 | 500 | 912051400 | | | | | MCE237 | | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS (cont)

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | COLLINS PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C40 | 68 | | 916430900 | SI68NP0 | TCZ-68 | TZ26 | NP0-337-680 | ZT-5468 | 5TCC-Q68 | |
| C41 | 47 | | 916446300 | SI47NP0 | TCZ-47 | TZ22 | NP0-338-470 | ZT-5447 | 5TCC-Q47 | |
| C42 | 36 | | 916444800 | | TCZ-36 | TZ19 | NP0L-360 | | | |
| C43 | 15 | | 916441200 | SI15NP0 | TCZ-15 | TZ11 | NP0K-150 | ZT-5415 | 5TCC-Q15 | |
| C44 | 150 | 500 | 912050600 | 1469-00015 | | 22R5T15 | | MCE236 | | |
| C45 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C46 | 100 | 500 | 912049400 | 1469-0001 | | 22RT1 | | MCE235 | MS-31 | |
| C47 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C48 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C49 | 150 | 500 | 912050600 | 1469-00015 | | 5R5T15 | | MCE236 | | |
| C50 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C51 | 180 | 500 | 912051100 | | | | | | | |
| C52 | 300 | 500 | 912052600 | | | | | MCE241 | | |
| C53 | 4 | | 916438000 | | | | | | | |
| C54 | 2 | | 916437300 | SI2NP0 | TCZ-2 | Z005 | NP0K-020 | ZT-552 | 5TCCB-V2 | |
| C55 | 180 | 500 | 912051100 | | | | | | | |
| C56 | 300 | 500 | 912052600 | | | | | MCE241 | | |
| C57 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCB235 | MS-31 | |
| C58 | 220 | 500 | 912051700 | | | | | | | |
| C59 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C60 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C61 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C62 | 10000 | | 913 056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C63 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C64 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C65 | 2 | | 916437300 | SI2NP0 | TCZ-2 | Z005 | NP0K-020 | ZT-552 | 5TCCB-V2 | |
| C66 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C67 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C68 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C69 | 2 | | 916437300 | SI2NP0 | TCZ-2 | Z005 | NP0K-020 | ZT-552 | 5TCCB-V2 | |
| C70 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C71 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C72 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C73A | .1 | 600 | 961516900 | 630/1.-.1 | | DYR6011 | | CBD602 | BP216 | |
| B | .1 | 600 | | | | | | | | |
| C74 | 2 | | 916437300 | SI2NP0 | TCZ-2 | Z005 | NP0K-020 | ZT-552 | 5TCCB-V2 | |
| C75 | 330 | 500 | 912052900 | | | | | | | |
| C76 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCB235 | MS-31 | |
| C77 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCB235 | MS-31 | |
| C78 | 7 | | | | | | | | | Note 6 |
| C79 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C80 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C81A | .1 | 600 | 961518700 | 630/.1-.1-.1 | | DYR6111 | | CBT602 | BP316 | |
| B | .1 | 600 | | | | | | | | |
| C | .1 | 600 | | | | | | | | |
| C82 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C83 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C84 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C85 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C86 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C87 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C88 | 6800 | 500 | 935211000 | | | | | | | |
| C89 | 100 | 500 | 912049400 | 1469-0001 | | 22R5T1 | | MCE235 | MS-31 | |
| C90 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C91 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |
| C92 | 10 | | 916440600 | SI10NP0 | TCZ-10 | TZ09 | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C93 | 2 | 500 | 916437300 | | | 22R5V2 | | | | |
| C94A | .1 | 600 | 961417500 | 630/.1-.1 | | DYR6011 | | CBD602 | BP216 | |
| B | .1 | 600 | | | | | | | | |
| C95 | 10000 | | 913056600 | SI10000 | D6-103 | TP67 | GP2-333-103 | UC-511 | 5HK-S1 | |

Note 1. C1A positive is terminal 3, C1B positive is terminal 5. Terminal 1 is common negative.
Note 2. Some models use 820MMF in this application (part #935501400).
Note 3. Some models use 430MMF in this application (part #912053800).
Note 4. Some models use 220MMF in this application (part #912051700).
Note 5. Some models use 75MMF in this application (part #912048500).
Note 6. Some models use 5MMF in this application (part #912042800).

PROPERTY OF
E. F. BLANKENSHIP
3934 MEADE ST
DENVER, COLORADO

# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | COLLINS PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 10KΩ | 2 | 380011800 | W-10K | A43-10K | | R10, 000L | RF Gain |
| B | Shaft | | Not Req. | Not Req. | RS-2 | | Not Req. | Attach to R1A |
| R2 | 500KΩ | 2 | 380011900 | Q13-133 | | | U-48 | Audio Gain |
| R3A | 100Ω | 2 | 380012000 | W100 | A43-100 | | R100L | "S" Meter Zero Adjust |
| B | Shaft | | Not Req. | Not Req. | FKS-1/4 | | Not Req. | Attach to R3A |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | COLLINS PART No. | IRC PART No. | |
| R4 | 1Meg | ½ | 745121200 | BTS-1Meg | |
| R5 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R6 | 33KΩ | ½ | 745114900 | BTS-33K | |
| R7 | 6800Ω | ½ | 745112100 | BTS-6800 | |
| R8 | 10KΩ | 1 | 745112800 | BTA-10K | |
| R9 | 330KΩ | ½ | 745119100 | BTS-330K | |
| R10 | 470Ω | ½ | 745107200 | BTS-470 | |
| R11 | 47KΩ | 1 | 745115600 | BTA-47K | |
| R12 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R13 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R14 | 33KΩ | ½ | 745114900 | BTS-33K | |
| R15 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R16 | 47KΩ | ½ | 745115600 | BTS-47K | |
| R17 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R18 | 470Ω | ½ | 745107200 | BTS-470 | |
| R19 | 33KΩ | 1 | 745114900 | BTA-33K | |
| R20 | 470KΩ | ½ | 745119800 | BTS-470K | |
| R21 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R22 | 470Ω | ½ | 745107200 | BTS-470 | |
| R23 | 33KΩ | 1 | 745114900 | BTA-33K | |
| R24 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R25 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R26 | 470KΩ | ½ | 745119800 | BTS-470K | |
| R27 | 10KΩ | ½ | 745112800 | BTS-10K | |
| R28 | 27KΩ | ½ | 745114600 | BTS-27K | |
| R29 | 47KΩ | ½ | 745115600 | BTS-47K | |
| R30 | 220KΩ | ½ | 745118400 | BTS-220K | |
| R31 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R32 | 220KΩ | ½ | 745118400 | BTS-220K | |
| R33 | 10KΩ | ½ | 745112800 | BTS-10K | |
| R34 | 27KΩ | ½ | 745114600 | BTS-27K | |
| R35 | 47KΩ | ½ | 745115600 | BTS-47K | |
| R36 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R37 | 10KΩ | ½ | 745112800 | BTS-10K | |
| R38 | 47KΩ | ½ | 745115600 | BTS-47K | |
| R39 | 2200Ω | 1 | 745310000 | BTA-2200 | |
| R40 | 100Ω | ½ | 745104400 | BTS-100 | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | COLLINS PART No. | IRC PART No. | |
| R41 | 160Ω 5% | ½ | 745105300 | BTS-160 5% | |
| R42 | 1800Ω | 2 | 745110000 | BTB-2200 | Note 1 |
| R43 | 27KΩ | ½ | 745114600 | BTS-27K | |
| R44 | 120Ω 5% | 8 | 747003200 | | |
| R45 | 310Ω 5% | 8 | 747003600 | | |
| R46 | 120Ω 5% | 8 | 747003200 | | |
| R47 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R48 | 470KΩ | ½ | 745119800 | BTS-470K | |
| R49 | 120KΩ | ½ | 745117400 | BTS-120K | |
| R50 | 100KΩ | 1 | 745117000 | BTA-100K | |
| R51 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R52 | 33KΩ | ½ | 745114900 | BTS-33K | |
| R53 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R54 | 220KΩ | ½ | 745118400 | BTS-330K | |
| R55 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R56 | 1000Ω | ½ | 745108600 | BTS-1000 | |
| R57 | 2200Ω | ½ | 745110000 | BTS-2200 | |
| R58 | 820Ω | ½ | 745108300 | BTS-820 | |
| R59 | 47KΩ | ½ | 745115600 | BTS-47K | |
| R60 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R61 | 68KΩ | ½ | 745116300 | BTS-68K | |
| R62 | 33KΩ | ½ | 745114900 | BTS-33K | |
| R63 | 470KΩ | ½ | 745119800 | BTS-470K | |
| R64 | 470KΩ | ½ | 745119800 | BTS-470K | |
| R65 | 3300Ω | ½ | 745110700 | BTS-3300 | |
| R66 | 220KΩ | ½ | 745118400 | BTS-220K | |
| R67 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R68 | 680KΩ | ½ | 745120500 | BTS-680K | |
| R69 | 4700Ω | ½ | 745111400 | BTS-4700 | |
| R70 | 100KΩ | ½ | 745117000 | BTS-100K | |
| R71 | 10KΩ | ½ | 745112800 | BTS-10K | |
| R72 | 220KΩ | ½ | 745118400 | BTS-220K | |
| R73 | 1000Ω | 2 | 745508600 | BTB-1000 | |
| R74 | 4000Ω 5% | 12 | 747104600 | | |
| R75 | 10Ω | ½ | 745100200 | BTS-10 | |
| R76 | 220Ω | ½ | | BTS-220 | Note 2 |

Note 1: Some models may use a 2200Ω resistor in this application.
Note 2: Not used in all models.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI#1 | SEC. 1 | SEC. 2 | SEC. 3 | COLLINS PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 117VAC PRI. #2 117VAC @.82A | 700VCT .090A (RMS) | 5VAC @2A | 6.3VAC @5A | 672042900 * | | | | | |

* Connect two primary windings in series for 220-240 volt operation.

# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | COLLINS PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 5KΩ | 600Ω Tap @ 4Ω | 677043000 | | | | | | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | COLLINS PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coil | 2.7Ω | | 5043056001 | | | | Band 1 (.5-1.5MC) |
| L2 | Ant. Coil | .6Ω | | 5052147002 | | | | Band 2 (1.5-2.5MC) |
| L3 | Ant. Coil | .5Ω | | 5052148002 | | | | Band 3 (2.5-3.5MC) |
| L4 | Ant. Coil | .4Ω | | 5043060001 | | | | Bands 4-7 (3.5-7.5MC) |
| L5 | Ant. Coil | .2Ω | | 5043061001 | | | | Bands 8-15 (7.5-15.5MC) |
| L6 | Ant. Coil | .1Ω | | 5043062001 | | | | Bands 16-30 (15.5-30.5MC) |
| L7 | Mixer Coil | 2.4Ω | | 5043056001 | | | | Band 1 (.5-1.5MC) |
| L8 | Mixer Coil Primary | .2Ω | | 5043060001 | | | | Bands 4-7 (3.5-7.5MC) |
| L9 | Mixer Coil Secondary | .7Ω | | 5043060001 | | | | Bands 4-7 |
| L10 | Mixer Coil Primary | 0Ω | | 5043061001 | | | | Bands 8-15 (7.5-15.5MC) |
| L11 | Mixer Coil Secondary | 0Ω | | 5043061001 | | | | Bands 8-15 |
| L12 | Mixer Coil Primary | .1Ω | | 5043062001 | | | | Bands 16-30 (15.5-30.5MC) |
| L13 | Mixer Coil Secondary | .2Ω | | 5043062001 | | | | Bands 16-30 |
| L14 | IF Coil | .5Ω | | 5043064001 | | | | Band 1 (10.5-11.5MC) |
| L15 | IF Coil | .2Ω | | 5043057001 | | | | Band 1 (10.5-11.5MC) |
| L16 | Injection Osc. Cathode Coil | 9.5Ω | | 5034535001 | | | | |
| L17 | Injection Osc. Harmonic Coil | .3Ω | | 5043074002 | | | | Tapped @ .1Ω |
| L18 | 4MC Band Suppression Coil | .4Ω | | 5046646002 | | | | |
| L19 | Variable IF Coil Primary | .5Ω | | 5043064001 | | | | |
| L20 | Variable IF Coil Secondary | .5Ω | | 5045347001 | | | | |
| L21 | Variable IF Coil Primary | .9Ω | | 5043066001 | | | | |
| L22 | Variable IF Coil Secondary | .9Ω | | 5043066001 | | | | |
| L23 | RF Choke | 8Ω | | 240007300 | | | | 500 Microhenries |
| L24 | 1st. IF Trans. | 5Ω | | 278009300 | | | | Crystal filter input |
| L25 | 2nd. IF Trans. | 5Ω | | 278009200 | | | | Crystal Filter output |
| L26 | 3rd. IF Trans. | 2.2Ω | 2.3Ω | 278009000 | | | | Sec. tapped @ .8Ω |
| L27 | 4th. IF Trans. | 2.2Ω | 2.2Ω | 278009000 | | | | Sec. tapped @ .8Ω |
| L28 | 5th. IF Trans. | 2.2Ω | 2.3Ω | 278009000 | | | | Sec. tapped @ .8Ω |
| L29 | BFO Coil | | | 278009100 | | | | Includes capacitors & resistors cathode winding .6Ω |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL DIRECT CURRENT | D.C. RESISTANCE | INDUCTANCE (0 CURRENT 1000 ∿) | COLLINS PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| L30 | .120A | 100Ω (Max) | 3 Hy. | 678043200 | | | | | |
| L31 | .080A | 300Ω (Max) | 5 Hy. | 678043100 | | | | | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | COLLINS PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG S/B | 1½A 125V | 264000700 | 265100300 | 31301.5 (3AG S/B-1.5A) | 342001 | MDL 1½ | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | COLLINS PART No. | NOTES |
|---|---|---|---|
| M2 | Lamp | 262023800 | NE-48 static discharge |
| M3 | Dial light | 262324000 | #47 (3 used) |
| M4 | Tuning unit | 5050410003 | Hermetically sealed VFO |
| M5 | Filter unit | | Crystal |
| M6A | Crystal | 291823400 | Bands 29-30 - 10666.67KC |
| B | Crystal | 291810200 | Bands 23-24 - 13000.00KC |
| C | Crystal | 291811400 | Bands 19-20 - 11000.00KC |
| D | Crystal | 291808300 | Bands 15-16 - 9000.00KC |
| E | Crystal | 291813500 | Bands 11-12, 25-26 - 14000.00KC |
| F | Crystal | 291811700 | Bands 9-10, 21-22 - 12000.00KC |
| G | Crystal | 291813300 | Bands 7-8, 17-18, 27-28 - 10000.00KC |
| H | Crystal | 291811300 | Bands 5-6, 13-14 - 8000.00KC |
| K | Crystal | 291813200 | Band 3 - 6000.00KC |
| M | Crystal | 291813100 | Band 1 - 4000.00KC |
| M7 | Crystal | 291595400 | Calibration (special 100KC unit) |
| M8 | Crystal | 291517500 | Filter (500KC) part of M5 unit |
| M9A | Bandswitch | 269127100 | Wafer-antenna coil selector |
| B | | 269127100 | Wafer-antenna trimmer selector |
| C | | 269127300 | Wafer-RF coil selector |
| D | | 269127300 | Wafer-RF amp. plate coil selector |
| E | | 269127300 | Wafer-mixer grid coil selector |
| F | | 269127100 | Wafer-mixer plate circuit selector |
| G | | 269127100 | Wafer-mixer plate circuit selector |
| M10A | Bandswitch | 269127200 | Wafer-inj.osc.harmonic selector |
| B | Bandswitch | 269127100 | Wafer-crystal selector |
| M11A | Bandswitch | 269127000 | Wafer-variable IF selector |
| B | Bandswitch | 269127000 | Wafer-variable IF selector |
| M12 | Switch | 259038000 | BFO On-Off |
| M13 | Switch | 259038100 | On-Standby-Off |
| M14 | Switch | 259037900 | Selectivity (part of M5 filter unit) |
| M15 | Switch | 259038000 | AVC On-Off |
| M16 | Switch | 259038000 | Limiter In-Out |
| M17 | Switch | 266306200 | Meter Input-Output |
| M18 | Switch | 259038000 | Calibrate On-Off |
| M19 | Relay | 972117600 | Break-in, contact rating 3 Amp. 150watt, 12V, .021A direct current |
| M20 | Meter | 476901700 | Audio level, 0-1MA 46 ohms ±10% |
| M21 | Rectifier | 353300000 | Dry disc. instrument type |
| | Trimmer cap | 922015300 | Variable air-ant. and cal. osc. adj. (7-100MMF) |
| | Trimmer cap | 922007900 | Variable air-crystal filter phasing (3.5-27MMF) |
| | Trimmer cap | 917103800 | Variable ceramic (8-50MMF) 19 used |
| | Trimmer cap | 917103600 | Variable ceramic (5-25MMF) 10 used |
| | Trimmer cap | 917103500 | Variable ceramic (3-12MMF) osc. grid circuit |
| | Drum | 5043097 | Band indicating |

# DIAL CORD STRINGING INSTRUCTIONS

MEGACYCLE POINTER CORD

Refer to figure on following page. Remove the front panel. If the cord is to be replaced, use 36-5/8 inches of nylon-covered cord.

(a) Turn KILOCYCLE shaft counter clockwise to stop.

(b) Tie a loop in the cord. Loop the cord over the tab at point X .

(c) Wind cord about one-half turn clockwise on pulley A, continue to pulley B, pointer, pulley C, and back to pulley A.

(d) Wind cord about 1-1/2 turns clockwise around pulley A. Fasten cord to the spring on pulley A. Fasten cord to the spring on pulley A with spring at full tension.

(e) Replace front panel, KILOCYCLE shaft flat washer, tension washer and collar, and knobs.

DRUM CORD

If the drum cord has jumped the pulleys, restring it without removing the front panel. If the cord is broken, remove the front panel. Use 27 inches of nylon-covered cord for replacement.

(a) Turn BAND CHANGE knob to band 30.

(b) Turn pulley E about one-half turn and hold tension of spring.

(c) Insert cord in pulley D and knot it. Wind cord about three-fourths of a turn on pulley D; extend to pulley E, and wind it 1-1/2 turns or more around pulley E as needed. Insert cord in hole and knot it.

(d) Replace panel and knobs.

(e) Loosen set screw in drum hub and turn drum until 30MC band is centered in the escutcheon opening; then tighten set screw.

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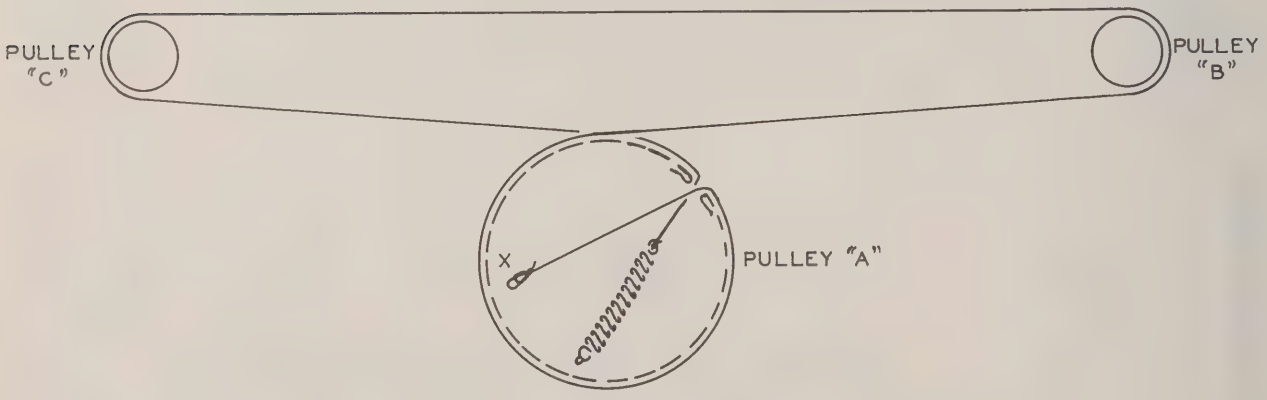
# RESISTANCE MEASUREMENTS

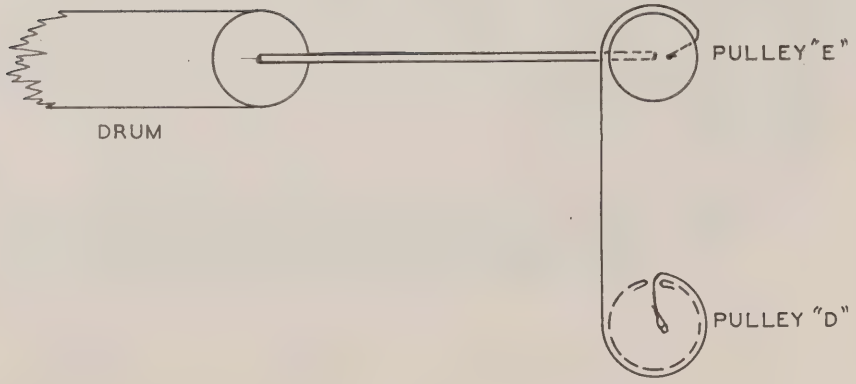
| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6AK5 | 1.2Meg | 0Ω | 0Ω | .1Ω | †18KΩ | †34KΩ | 0Ω | | |
| V 2 | 6BE6 | 2.5Ω | 470Ω | 0Ω | .1Ω | †3.6KΩ | †48KΩ | 330KΩ | | |
| V 3 | 6AK5 | 100KΩ | 9.5Ω | 0Ω | .1Ω | †50KΩ | †37KΩ | 9.5Ω | | |
| V 4 | 6BE6 | 100KΩ | 470Ω | 0Ω | .1Ω | †2.6KΩ | †34KΩ | .2Ω | | |
| V 5 | 6BE6 | 100KΩ | 470Ω | 0Ω | .1Ω | †2.6KΩ | †33KΩ | .3Ω | | |
| V 6 | 6BA6 | 330KΩ | 0Ω | 0Ω | .1Ω | †34KΩ | †34KΩ | 0Ω | | |
| V 7 | 6BA6 | 150KΩ | 0Ω | 0Ω | .1Ω | †16KΩ | †44KΩ | 0Ω | | |
| V 8 | 6BA6 | 530KΩ | 0Ω | 0Ω | .1Ω | †▲7KΩ | ■27KΩ | 0Ω | | |
| V 9 | 6BA6 | 67KΩ | 0Ω | 0Ω | .1Ω | †▲4.8KΩ | ■27KΩ | 0Ω | | |
| V 10 | 6BA6 | 67KΩ | 100Ω | 0Ω | .1Ω | †▲2.6KΩ | †▲47KΩ | 100Ω | | |
| V 11 | 12AX7 | 550Ω | 550Ω | 100KΩ | .1Ω | .1Ω | 100KΩ | 100KΩ | 0Ω | 0Ω |
| V 12 | 6BA6 | 100KΩ | 0Ω | 0Ω | .1Ω | †35.5KΩ | †100KΩ | .2Ω | | |
| V 13 | 12AU7 | 58KΩ | 700KΩ | 2.6KΩ | .1Ω | .1Ω | †2.6KΩ | 100KΩ | 1KΩ | 0Ω |
| V 14 | 12AX7 | 33KΩ | 33KΩ | 1Meg | .1Ω | .1Ω | †220KΩ | 500KΩ | 3.3KΩ | 0Ω |
| V 15 | 6AQ5 | 100KΩ | 0Ω | 0Ω | .1Ω | †450Ω | †400Ω | 100KΩ | | |
| V 16 | 6BA6 | 680KΩ | ♦4.7KΩ | .1Ω | 0Ω | †230KΩ | †110KΩ | ♦4.7KΩ | | |
| V 17 | 5V4G | INF | ▲23KΩ | INF | 650Ω | INF | 650Ω | INF | ▲23KΩ | |
| V 18 | OA2 | †4.1KΩ | INF | INF | 0Ω | †4.1KΩ | INF | INF | | |

ALL MEASUREMENTS ON BAND # 1 - CONTROLS SET FOR NORMAL OPERATION EXCEPT AS NOTED.
† MEASURED FROM PIN 8 OF V17
▲ POWER SWITCH IN "ON" POSITION (AC CORD NOT CONNECTED).
■ POWER SWITCH IN "OFF" POSITION
♦ MEASURED WITH M18 CALIBRATION SWITCH IN "ON" POSITION

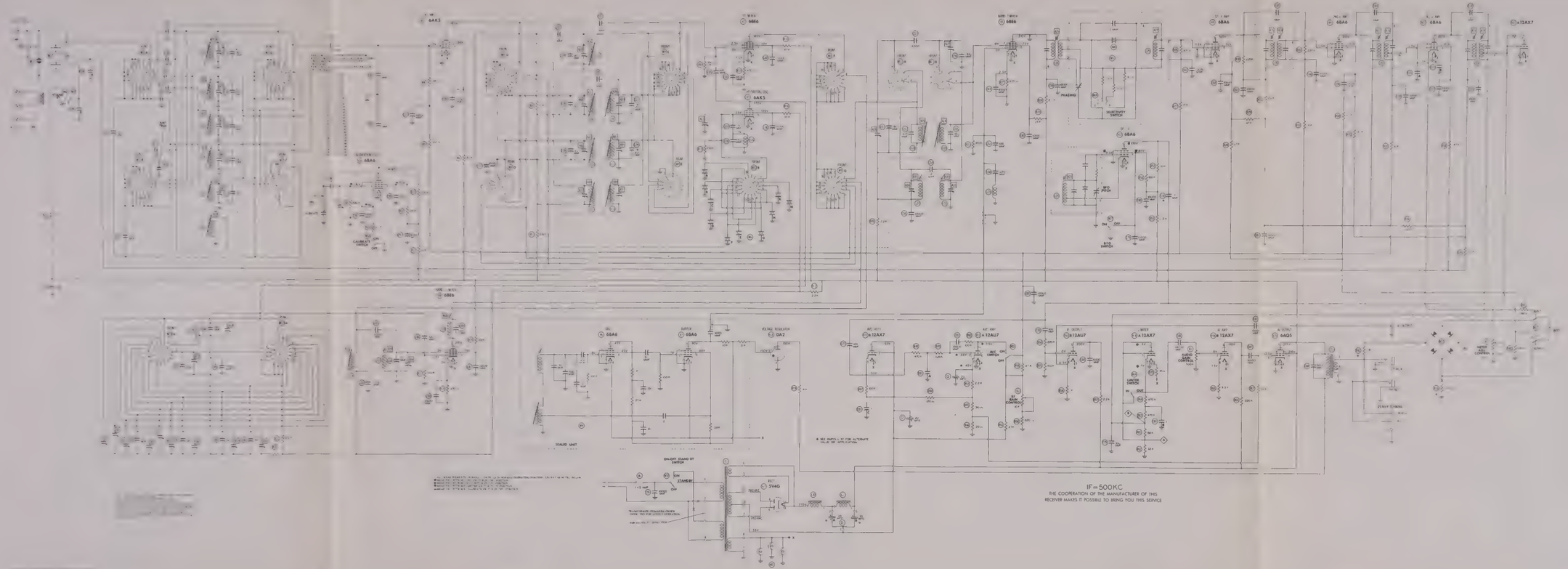
# DIAL CORD STRINGING

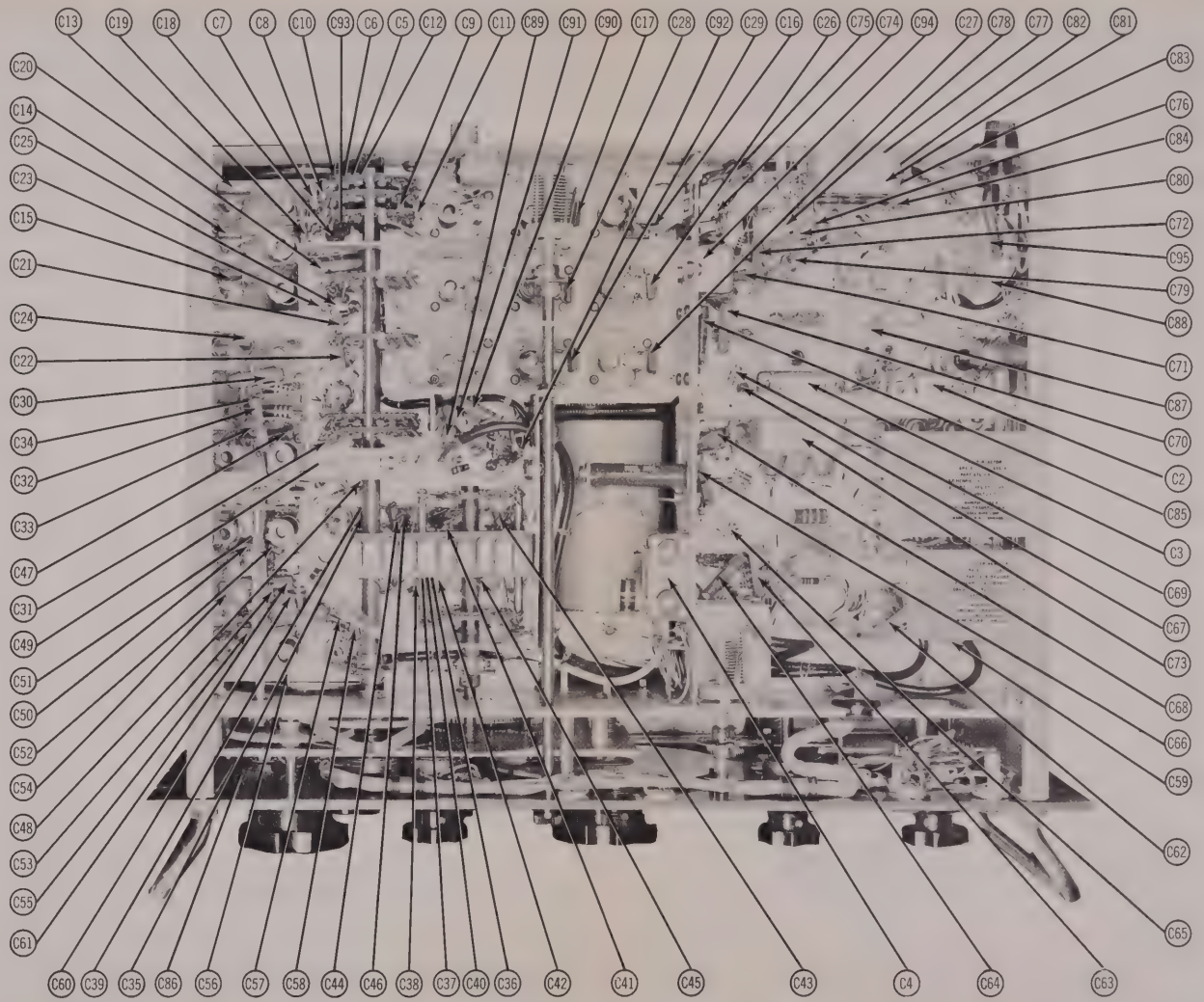



MEGACYCLE POINTER CORD




DRUM CORD


IF = 500KC
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE




CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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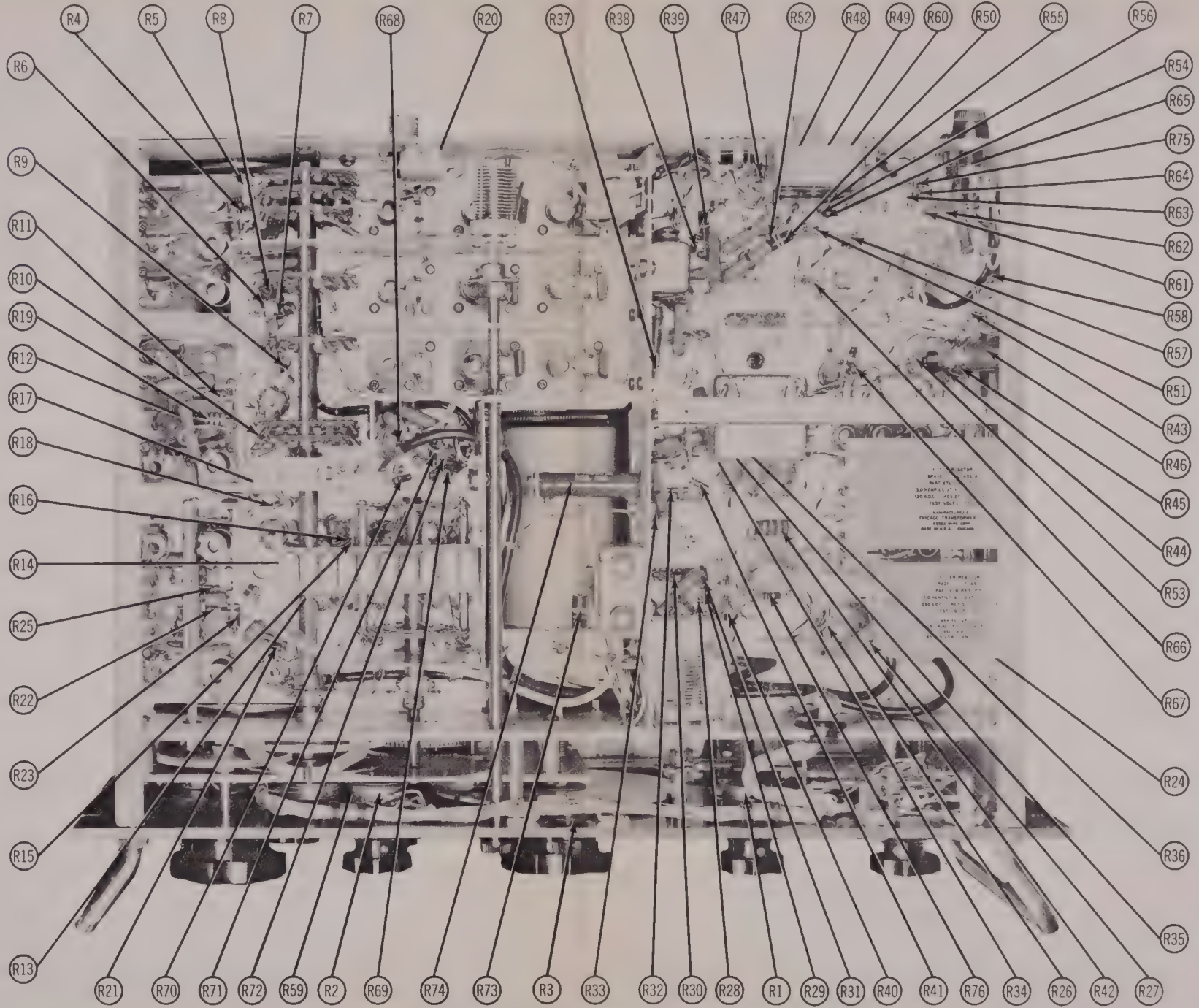
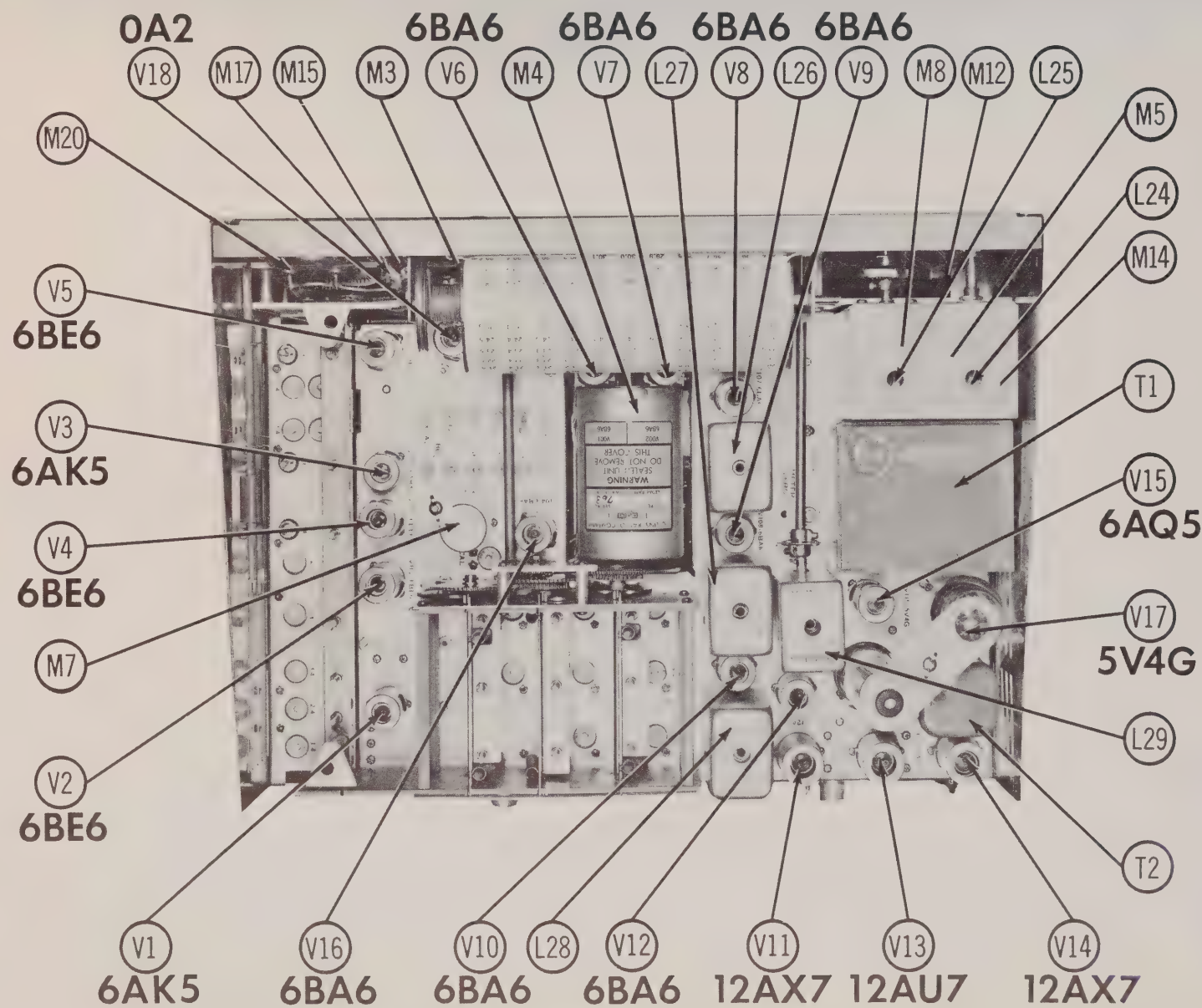
DE[illegible]




CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION




CHASSIS TOP VIEW TUBE PLACEMENT

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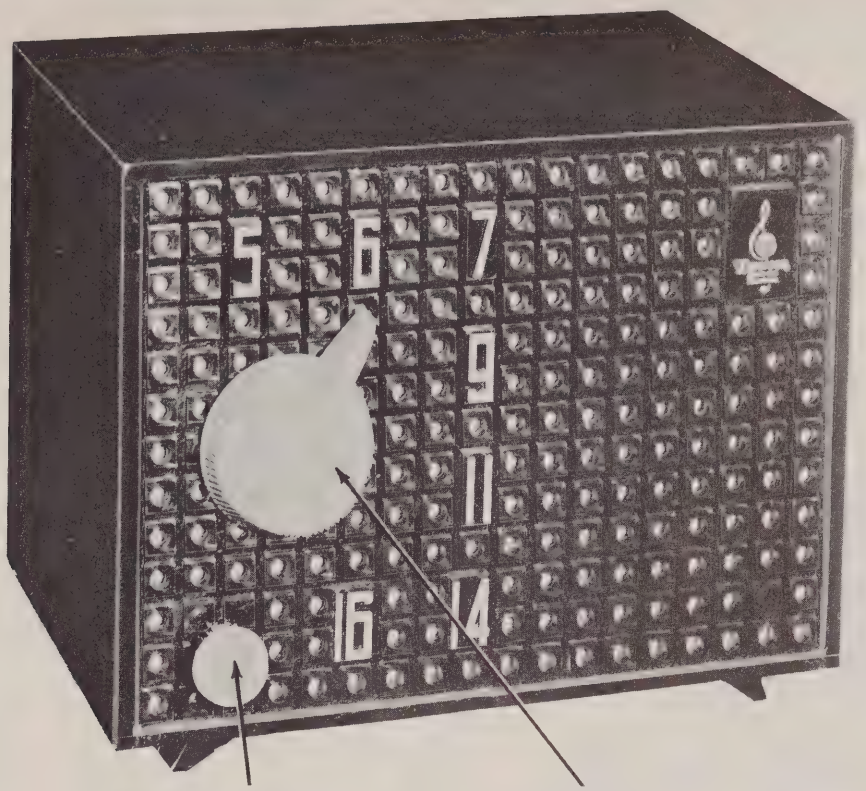
EMERSON MODEL
805B (Ch. 120202-D)




EMERSON MODEL
805B (Ch. 120202-D)

| | |
|---|---|
| TRADE NAME | Emerson Model 805B (Ch. 120202-D) |
| MANUFACTURER | Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York, N. Y. |
| TYPE SET | AC-DC Operated AM Superheterodyne Receiver |
| TUBES (Five) | Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 (or) 12 AV6 Det. -AVC-AF Amp., 50C5 Output, 35W4 Rectifier |
| POWER SUPPLY | 105-125 Volts AC-DC |
| TUNING RANGE—BROADCAST | 540KC-1620KC RATING .24 Amp. @ 117 Volts AC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver in cabinet.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | .005MFD | High side to pin 7 (grid) of 12BE6 (V1) Low side to B- | 455KC (400~ Mod.) | Tuning gang Fully open | Across Voice Coil | A1, A2 A3, A4 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2 | | Loop | 1620KC | " | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3 | | " | 1400KC | Tune to 1400KC Signal | " | A6 | " |



"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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# PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 805B (Ch. 120202-B)

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: EMERSON PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | IF Amp. | 12BA6 | 12BA6 | 7BK | |
| V3 | Det-AVC-AF Amp. | 12AT6 | 12AT6 | 7BT | 12AV6 used as an alternate |
| V4 | Output | 50C5 | 50C5 | 7CV | |
| V5 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: EMERSON PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 30 | 150 | 925218 | PRS150/50-30 | | BBRD-5315 | | TCD497 | TVA-2450 | Green Black |
| B | 50 | 150 | | | | | | | | |
| C2 | .05 | 400 | 923554 | P488-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C3A | 220 | | | | | | | | | |
| B | 2000 | | | | | | | | | |
| C | 5000 | | ♦923-024 | ♦PA-133-1 | ♦PC-150 | ♦116TM1 | ♦1408-01 | | ♦DT-1 | |
| D | 250 | | | | | | | | | |
| E | | | | | | | | | | |
| C4 | .02 | 400 | 923524 | P488-02 | DF-203 | CUB432 | | PT412 | 4TM-S2 | |
| C5 | .05 | 400 | 923554 | 489ZX-05 | DF-503 | PJ4S5 | | PT415 | 4TM-S5 | |
| C6 | .1 | 400 | 923515 | P488-1 | DF-104 | PJ4P1 | | PT401 | 4TM-P1 | |

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, and R5C are combined in one unit.
When replacing items individually, items C3D and C3E should total 250MMF.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: EMERSON PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ | ½ | 390205 | Q11-133 | A47-500K-S | AB-59 | U-50 | Volume |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | AK-4 | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWE-12 | KB-1 | US-26 | Attach to R1A |

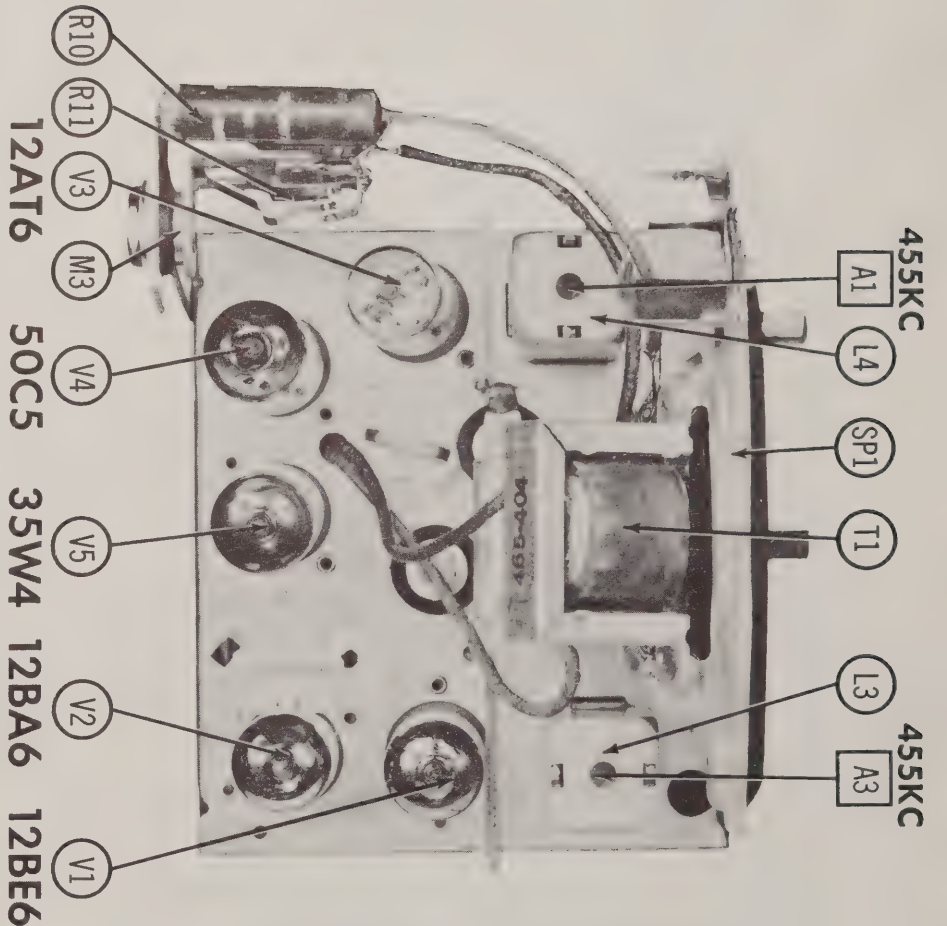
## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: EMERSON PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 22KΩ | ½ | | BTS-220K | |
| R3 | 120Ω | ½ | 340272 | BTS-120 | |
| R4 | 3.3Meg | ½ | 351332 | BTS-3.3Meg | |
| R5A | 6.8Meg | ½ | | BTS-6.8Meg | |
| B | 470KΩ | ½ | ♦923024 | BTS-470K | |
| C | 470KΩ | ½ | | BTS-470K | |
| R6 | 10KΩ | ½ | 350732 | BTS-10K | |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: EMERSON PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7 | 150Ω | ½ | 340292 | BTS-150 | |
| R8 | 1500Ω | 1 | 380532 | BTA-1500 | |
| R9 | 18Ω | ½ | 340072 | BTS-18 | |
| R10 | 3.3Ω | 2 | 397077 | | |
| R11 | 39Ω | ½ | 340152 | BTS-39 | |

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | EMERSON PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T1 | 2.6KΩ | 3.5Ω | Part of Speaker | A-3332 | A-3025 | X-12X | Z1101 | 26S58 ① | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | EMERSON PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.5Ω | 180123 | ST-113 Mod. P4-X | 4A07 | |

## COILS (RF-IF)

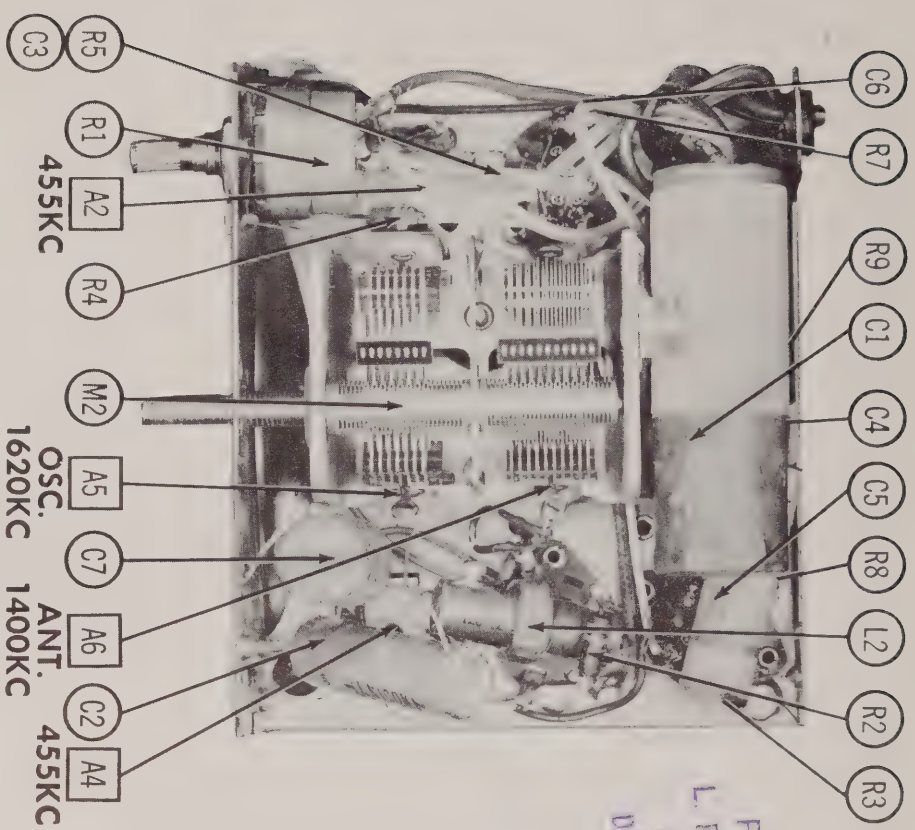
| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | EMERSON PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coil | .5Ω | | 700081 | | | | |
| L2 | Osc. Coil | .5Ω | 6.5Ω | 716071 | 14-1073 | | 69-Osc.* | |
| L3 | Input IF | 17Ω | 17Ω | 720033 | 16-6758 | BC-352 | 12-C1 | |
| L4 | Output IF | 16Ω | 16Ω | 720033 | 16-6758 | BC-353 | 12-C2 | |

*Drill new mounting hole.

## MISCELLANEOUS

| ITEM No. | PART NAME | EMERSON PART No. | NOTES |
|---|---|---|---|
| M1 | Dial light | 807000 | #47, Bayonet; not used in all versions |
| M2 | Tuning cap. | 900086 | 35-379MMF; 27-177 MMF. |
| M3 | Earphone listening attachment | 960900 | |
| | Cabinet | 140591 | Walnut |
| | Cabinet | 140591A | Ivory |
| | Knob | 460403 | Pointer |
| | Knob | 460404 | On-Off-Volume |

# CHASSIS—BOTTOM VIEW

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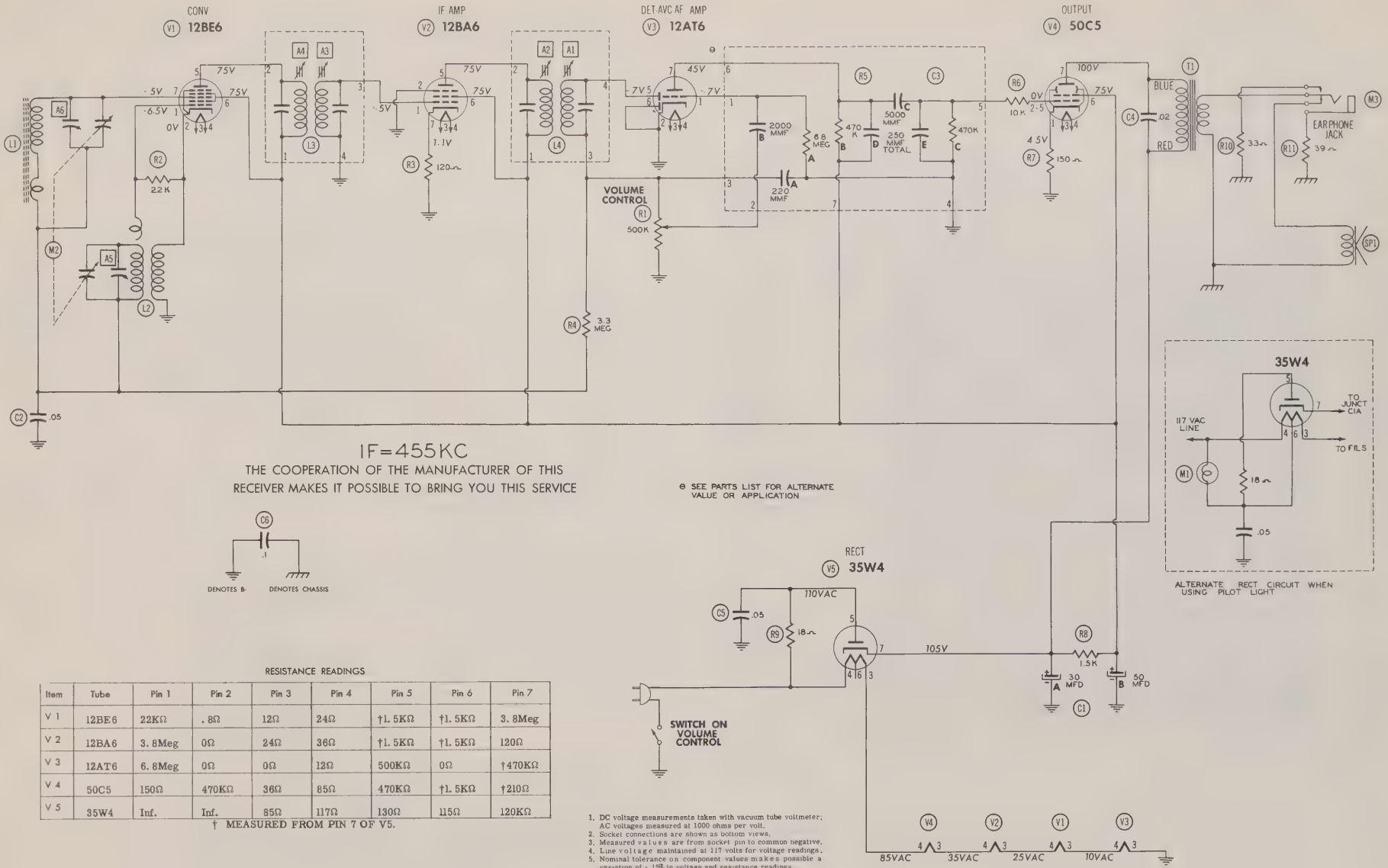
EMERSON
MODEL 805B (Ch. 120202-B)




# IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 22KΩ | .8Ω | 12Ω | 24Ω | †1.5KΩ | †1.5KΩ | 3.8Meg |
| V 2 | 12BA6 | 3.8Meg | 0Ω | 24Ω | 36Ω | †1.5KΩ | †1.5KΩ | 120Ω |
| V 3 | 12AT6 | 6.8Meg | 0Ω | 0Ω | 12Ω | 500KΩ | 0Ω | †470KΩ |
| V 4 | 50C5 | 150Ω | 470KΩ | 36Ω | 85Ω | 470KΩ | †1.5KΩ | †210Ω |
| V 5 | 35W4 | Inf. | Inf. | 85Ω | 117Ω | 130Ω | 115Ω | 120KΩ |

† MEASURED FROM PIN 7 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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GROMMES
MODEL LJ-2

GROMMES
MODEL LJ-2

| | |
|---|---|
| TRADE NAME | Grommes Model LJ-2 |
| MANUFACTURER | Precision Electronics, Inc., 9101 King St., Franklin Park, Ill. |
| TYPE SET | AC Operated 3 Channel 8 Watt Audio Amplifier |
| TUBES (Five) | Types 6SC7 Pre-Amp., 6SL7GT AF Amp. -Phase Inverter, (2) 6V6GT Output, 5Y3GT Rectifier |
| POWER SUPPLY | 110-120 Volts AC-60 Cycles RATING .6 Amp. @ 117 Volts AC |

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# PARTS LIST AND DESCRIPTIONS

GROMMES MODEL LJ-2

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | GROMMES PART No. | STANDARD REPLACEMENT | | |
| V1 | Pre-Amplifier | 6SC7 | 6SC7 | 8S | |
| V2 | AF Amplifier-Phase Inverter | 6SL7GT | 6SL7GT | 8BD | |
| V3 | Output | 6V6GT | 6V6GT | 7S | |
| V4 | Output | 6V6GT | 6V6GT | 7S | |
| V5 | Rectifier | 5Y3GT | 5Y3GT | 5T | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | GROMMES PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▲40 | 400 | | AFH4-78 | | D064 | | FP429 | TVL-4734 | |
| B | ■30 | 350 | | | | | | | | |
| C | ▲10 | 300 | | | | | | | | |
| D | 20 | 25 | | | | | | | | |
| C2 | 10 | 250 | | PRS250/12 | | BR1025 | | TC52 | TVA-1205 | |
| C3 | 100 | 10 | | PRS12/100 | | BRH121 | | TC2501 | TVA-1160 | |
| C4 | .05 | 400 | | P488-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C5 | .01 | 400 | | P488-01 | D6-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C6 | .003 | 600 | | P688-003 | D6-302 | CUB6D3 | GP2-333-302 | PT623 | 6TM-D3 | |
| C7 | .01 | 400 | | P488-01 | D6-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C8 | 5000 | | | | | | | | | |
| C9 | 5000 | | | | | | | | | |
| C10 | .01 | 400 | | P488-01 | D6-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C11 | .01 | 400 | | P488-01 | D6-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |

## CONTROLS

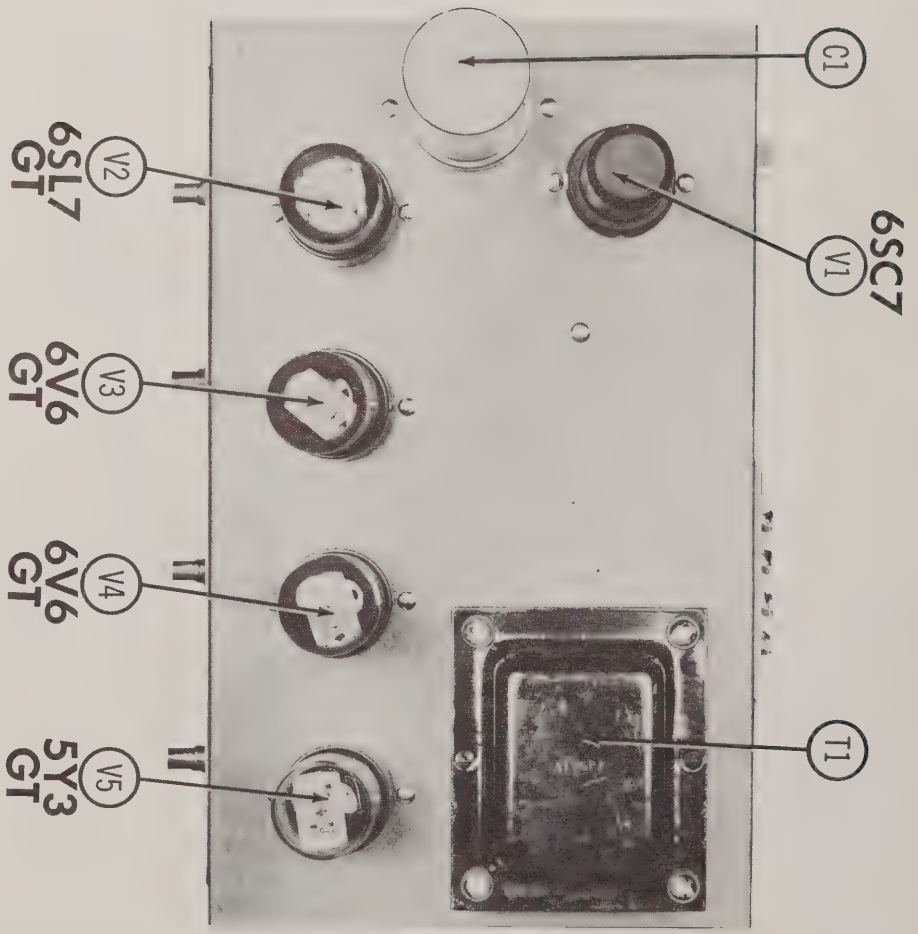
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | GROMMES PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 2Meg | ½ | W3852 | Q13-139 | A47-2Meg-Z | B-76-S | U-55 | Bass |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWE-12 | Not Req. | US-26 | Attach to R1A |
| R2 | 1.5Meg | ½ | W3851 | Q18-139X | | BT-82 | UT-451 | Treble -tapped ⓐ 800KΩ |
| R3 | 1.5Meg | ½ | W3851 | Q18-139X | | BT-82 | US-451 | Volume - tapped ⓐ800KΩ |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | GROMMES PART No. | IRC PART No. | |
| R4 | 47KΩ | ½ | | BTS-47K | |
| R5 | 3.3Meg | ½ | | BTS-3.3Meg | |
| R6 | 47KΩ | 1 | | BTA-47K | |
| R7 | 3.3Meg | ½ | | BTS-3.3Meg | |
| R8 | 100KΩ | ½ | | BTS-100K | |
| R9 | 47KΩ | 1 | | BTA-47K | |
| R10 | 47KΩ | ½ | | BTS-47K | |
| R11 | 100Ω | ½ | | BTS-100 | |
| R12 | 470KΩ | ½ | | BTS-470K | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | GROMMES PART No. | IRC PART No. | |
| R13 | 100KΩ | ½ | | BTS-100K | |
| R14 | 470KΩ | ½ | | BTS-470K | |
| R15 | 2200Ω | ½ | | BTS-2200 | |
| R16 | 390KΩ | ½ | | BTS-390K | |
| R17 | 300Ω | 5 | | 1 3/4A-300 | |
| R18 | 470KΩ | ½ | | BTS-470K | |
| R19 | 5600Ω | 2 | | BTB-5600 | |
| R20 | 2700Ω | ½ | | BTS-2700 | |
| R21 | 27KΩ | ½ | | BTS-27K | |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | GROMMES PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 117VAC @.6A | 690VCT .073ADC | 5VAC @2A | 6.3VAC @1.5A | 136P2 | PM-8409 | P-2952 | R-11B | P9311 | 24R04 ① |

① Drill new mounting holes.

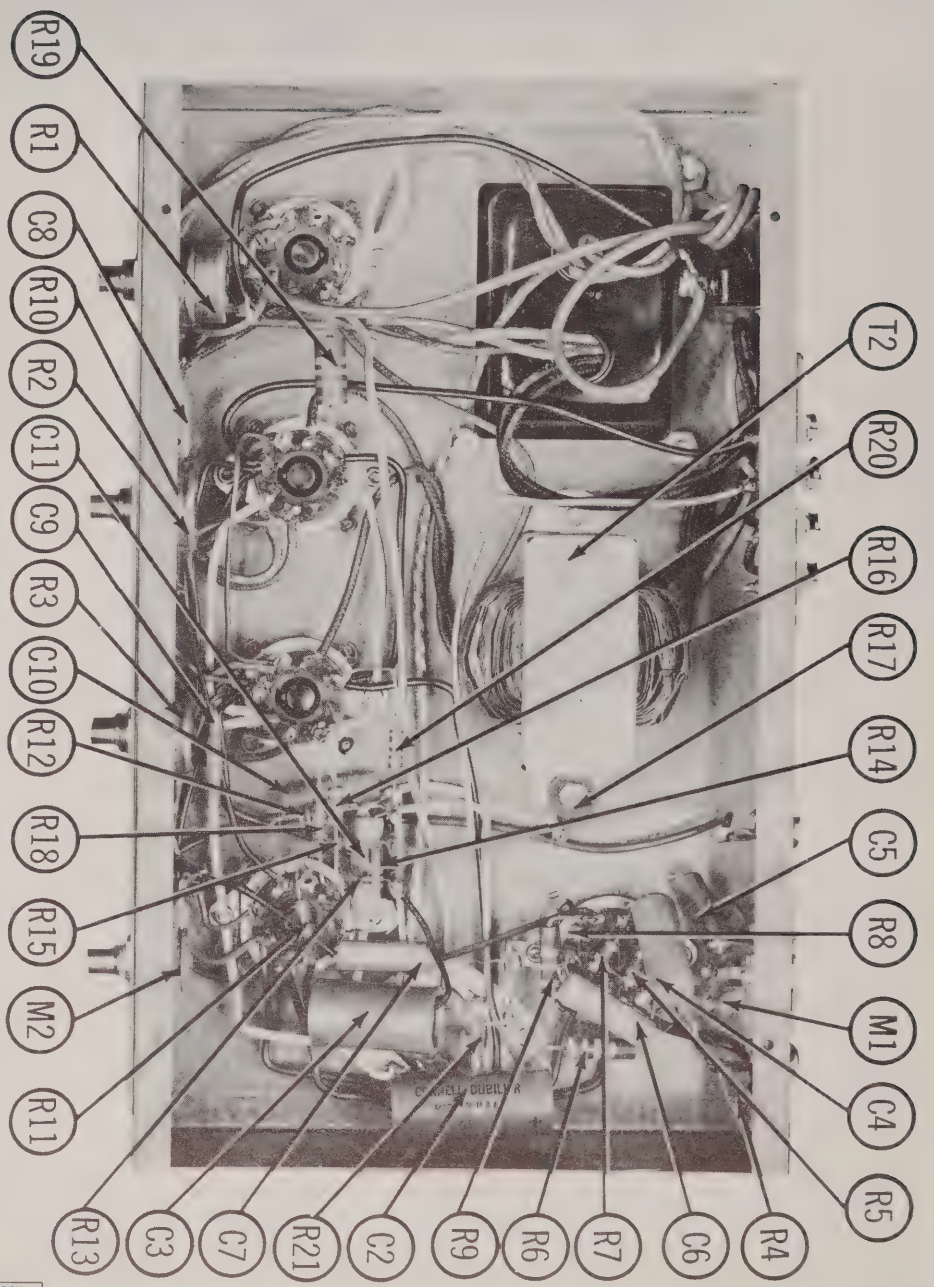
## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | GROMMES PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 7.5KΩ CT | 16Ω tap @ 8Ω, 4Ω | 136A9 | | A-3027 | S-28X | | 22S44 ① | ① Drill new mounting holes, mount on top of chassis. |

## MISCELLANEOUS

| ITEM No. | PART NAME | GROMMES PART No. | NOTES |
|---|---|---|---|
| M1 | Switch | | Input Selector #1 |
| M2 | Switch | | Input Selector #2 |

# CHASSIS—BOTTOM VIEW

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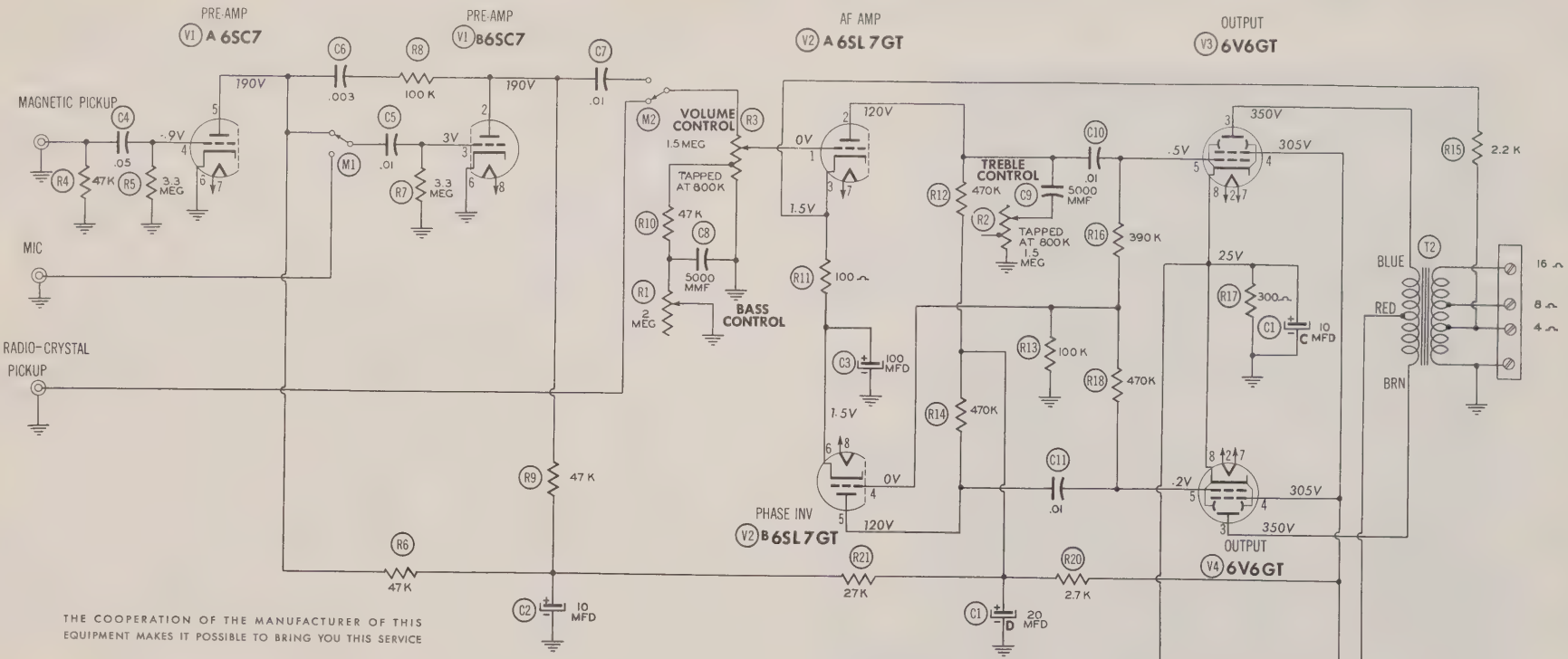


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6SC7 | 0Ω | †82.3KΩ | 3.3Meg | 3.3Meg | †82.3KΩ | 0Ω | 300Ω | 300Ω |
| V 2 | 6SL7GT | 350KΩ | †475KΩ | 2.2KΩ | 100KΩ | †475KΩ | 2.3KΩ | 300Ω | 300Ω |
| V 3 | 6V6GT | 0Ω | 300Ω | †140Ω | †5.6KΩ | 490KΩ | 570KΩ | 300Ω | 300Ω |
| V 4 | 6V6GT | 0Ω | 300Ω | †140Ω | †5.6KΩ | 570KΩ | INF | 300Ω | 300Ω |
| V 5 | 5Y3GT | INF | 300KΩ | INF | 138Ω | INF | 149Ω | INF | 300KΩ |

† MEASURED FROM PIN 8 OF V 5

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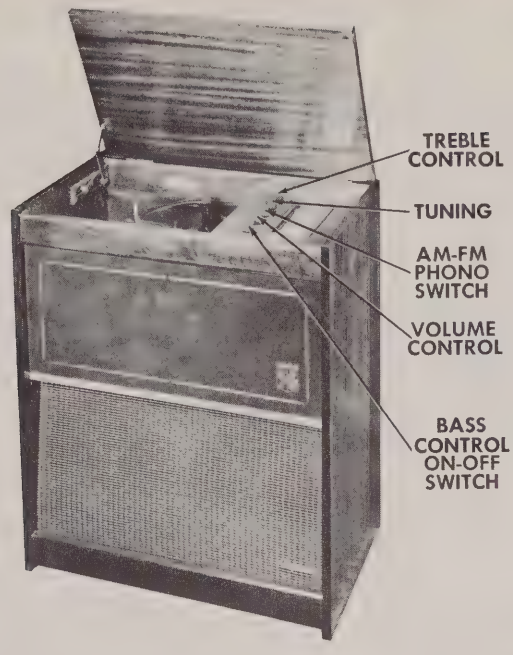
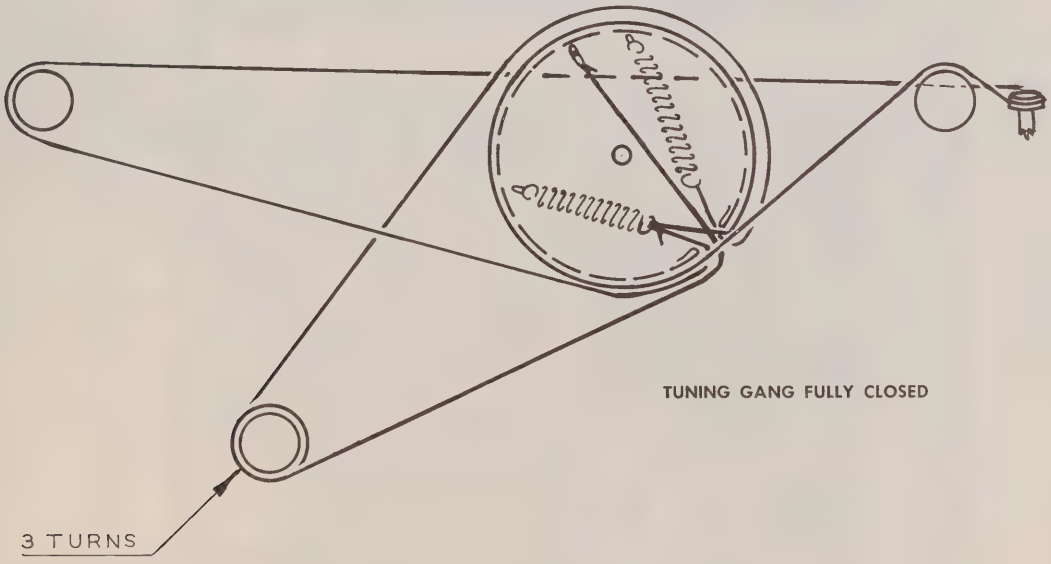
MAGNAVOX
MODEL 252M (CR700 & AMP132)




MAGNAVOX
MODEL 252M (CR700 & AMP132)

| | | |
|---|---|---|
| TRADE NAME | Magnavox Model 252M (Comprised of Tuner CR700 & Amplifier AMP 132) | |
| MANUFACTURER | Magnavox Co., 2131 Bueter Rd., Fort Wayne, Indiana | |
| TYPE SET | AC Operated AM-FM-Phono Combination Superheterodyne Receiver | |
| TUBES | Fourteen | |
| POWER SUPPLY | 110-120 Volts AC-50/60 Cycles | RATING 1.26 Amp. @ 117 Volts AC |
| TUNING RANGE -BROADCAST | 540-1620KC | FREQ.MOD. 88-108MC |

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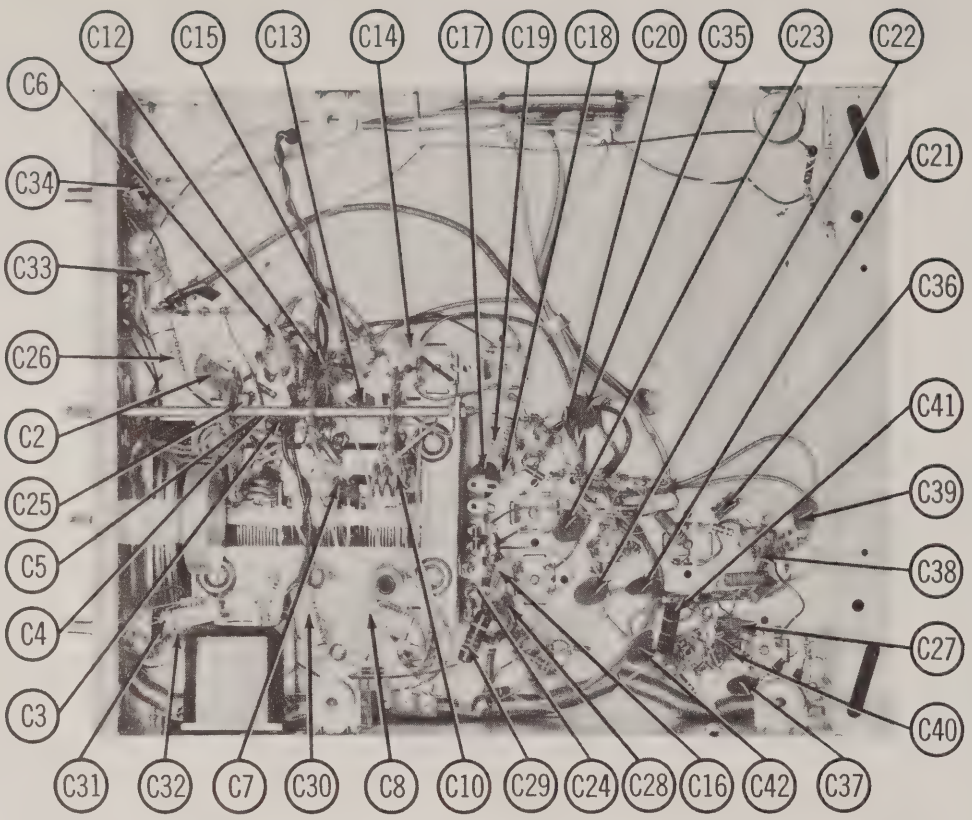
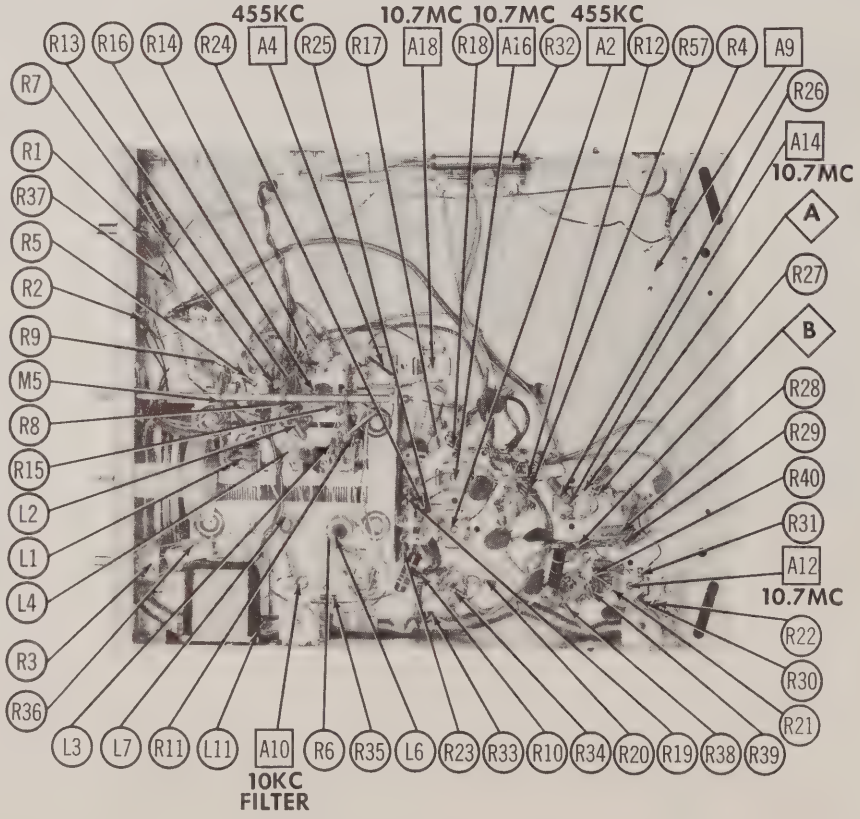
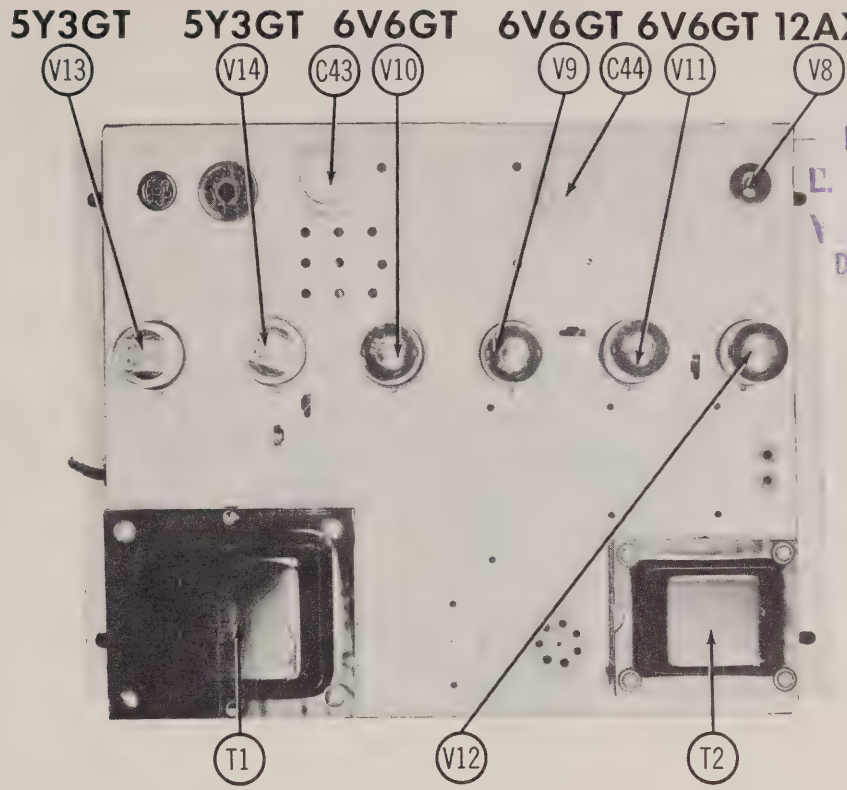



**TUNER CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION**




**TUNER CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION**

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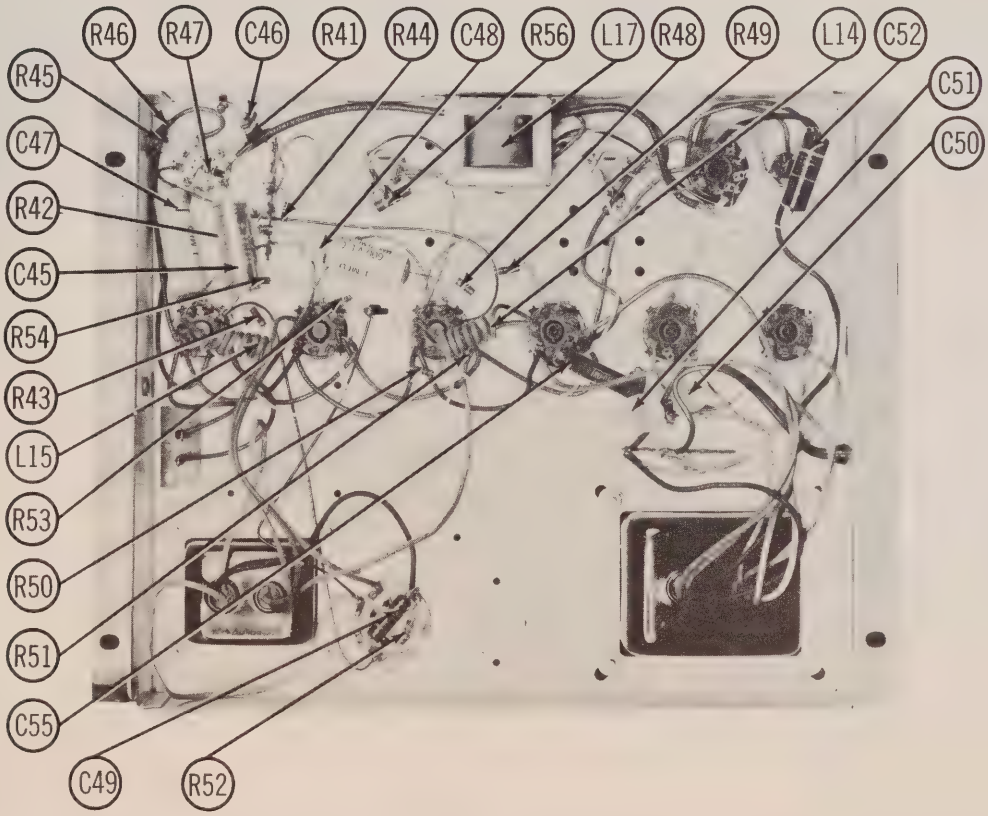
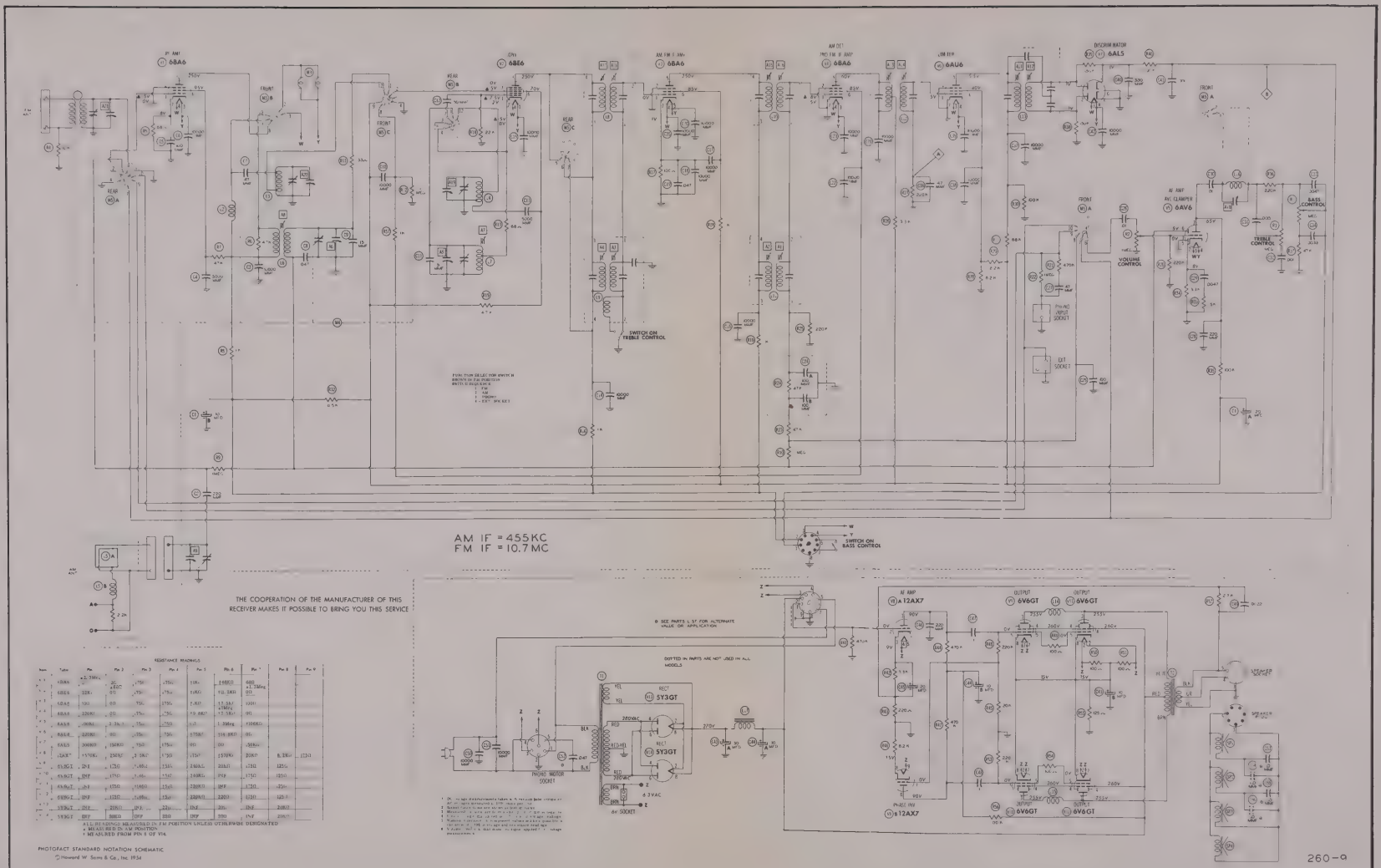
POWER SUPPLY CHASSIS-TOP VIEW




POWER SUPPLY CHASSIS-BOTTOM VIEW


AM IF = 455KC
FM IF = 10.7 MC
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SWITCH ON TREBLE CONTROL
SWITCH ON BASS CONTROL
VOLUME CONTROL
TREBLE CONTROL
BASS CONTROL
PHONO INPUT SOCKET
EXT SPEAKER SOCKET
PHONO MOTOR SOCKET
AC SOCKET
SPEAKER
RESISTANCE READINGS
ALL READINGS MEASURED IN FM POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED IN AM POSITION
† MEASURED FROM PIN 8 OF V14
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260-9

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequencyend of dial.

AM ALIGNMENT

Set the treble control to sharp tune position.
Bass and volume controls should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1 | .01MFD | High side to bin 7 (grid) of 6BE6 (V2). Low side to chassis. | 455KC | AM | 1000KC | Across voice coil | A1, A2 | Adjust for maximum deflection. |
| 2 | " | High side to loop antenna terminal "H". Low side to terminal "L". | 1400KC | " | 1400KC | " | A5, A6 | " |
| 3 | " | " | 600KC | " | 600KC | " | A7, A8 | Adjust for maximum deflection. Repeat step 2. |
| 4 | | Loop | 1400KC | " | Tune to 1400KC signal. | " | A9 | Install chassis in cabinet and connect AM loop antenna. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |

10KC FILTER ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 5 | Direct | High side to bottom hole in phono pick-up socket (on radio chassis rear apron) Low side to top hole (chassis ground). | 10KC | AM | Any | Across voice coil | A10 | Turn treble control fully clockwise. Set band selector switch to "Phono" position. Adjust for minimum output. |

ALTERNATE 10KC FILTER ALIGNMENT

If a suitable audio oscillator is not available set the band selector to "Broadcast" position and tune to a point between two adjacent channel stations having approximately the same power. If A10 is misadjusted a whistle will be heard from the speaker. Adjust A10 until the whistle is eliminated.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If signal generator output is insufficient to provide useable indications when performing steps 6 and 7, align the last IF stage as outlined in step 8 then perform steps 6 and 7 leaving the generator connected as in step 8.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 6. | .01MFD in series with 1KΩ carbon resistor | High side to pin 1 (grid) of 6AU6 (V6). Low side to chassis. | 10.775MC (Unmod) | FM | Tuning gang fully closed | DC probe to point Ⓑ. Common to chassis. | A11, A12 | Adjust for maximum deflection. |
| 7. | " | " | 10.7MC | " | " | " | A12 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Check DC voltage at 10.625MC. It should be within 10% of voltage at 10.775MC and of opposite polarity. |
| 8. | " | High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis. | 10.7MC | " | " | DC probe thru 1Meg to point Ⓐ. Common to chassis. | A13, A14 | Adjust generator output to produce at least 3 volts on VTVM. Adjust for maximum deflection. |
| 9. | " | High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis. | 10.7MC | " | " | " | A15, A16 | " |
| 10. | " | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 10.7MC | " | " | " | A17, A18 | Adjust for maximum deflection. If necessary retouch A13 thru A18 by repeating steps 8, 9 and 10. |

FIG. 1

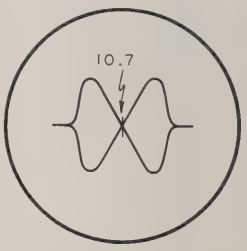


FIG. 2

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 6 | .01MFD in series with 1KΩ carbon resistor | High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis. | 10.7MC (450KC Swp.) | FM | Tuning gang fully closed. | Vert. amp. to point Ⓑ | A11, A12 | Adjust A12 so that 10.7MC occurs at center of cross-over lines as in fig. 2. Adjust A11 for maximum amplitude and straightness of cross over lines. |
| 7 | " | High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis. | 10.7MC | " | " | Vert. amp. thru 1Meg to point Ⓐ Low side to chassis. | A13, A14 | Adjust for response curve of maximum amplitude and symmetry similar to fig. 1. |
| 8 | " | High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis | 10.7MC | " | " | " | A15, A16 | " |
| 9 | " | High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis. | 10.7MC | " | " | " | A17, A18 | Adjust for response curve of maximum amplitude and symmetry. Continue alignment with step 11. |

FM RF ALIGNMENT

Connect one of the FM antenna terminals to ground with a short jumper.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 11. | 300Ω Carbon Resistor | High side thru 300Ω to ungrounded FM antenna terminal. Low side to chassis. | 107MC (Unmod) | FM | 107MC | DC probe thru 1Meg to point Ⓐ. Common to chassis. | A19, A20 A21 | Adjust generator output to provide at least 3 volts on VTVM. Adjust for maximum deflection in order given. If necessary, rock tuning gang thru 107MC signal when adjusting A20. |

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

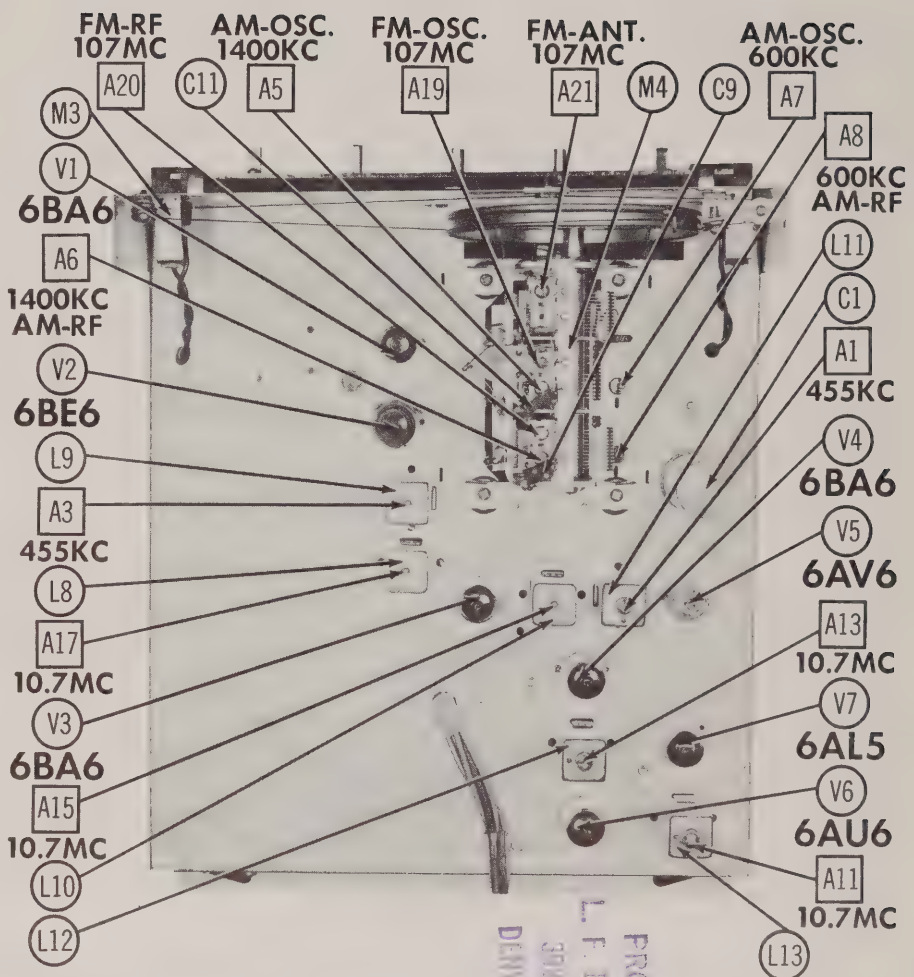
| ITEM No. | USE | REPLACEMENT DATA: MAGNAVOX PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amp. | 6BA6 | 6BA6 | 7BK | CR 700 Chassis |
| V2 | Converter | 6BE6 | 6BE6 | 7CH | |
| V3 | AM FM IF Amp. | 6BA6 | 6BA6 | 7BK | |
| V4 | 2nd FM IF Amp-AM Det | 6BA6 | 6BA6 | 7BK | |
| V5 | AF Amp-AVC Clamper | 6AV6 | 6AV6 | 7BT | |
| V6 | Limiter | 6AU6 | 6AU6 | 7BK | |
| V7 | Discriminator | 6AL5 | 6AL5 | 6BT | |
| V8 | AF Amp-Phase Inverter | 12AX7 | 12AX7 | 9A | AMP 132 Chassis |
| V9 | Output | 6V6GT | 6V6GT | 7S | |
| V10 | Output | 6V6GT | 6V6GT | 7S | |
| V11 | Output | 6V6GT | 6V6GT | 7S | |
| V12 | Output | 6V6Gt | 6V6GT | 7S | |
| V13 | Rectifier | 5Y3GT | 5Y3GT | 5T | |
| V14 | Rectifier | 5Y3GT | 5Y3GT | 5T | |

## CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT | REPLACEMENT DATA: MAGNAVOX PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ■20 | 475 | 270023-12 | | | C096 | | | R1419 | |
| B | ▲10 | 475 | | | | | | | | |
| C | 20 | 25 | | | | | | | | |
| C2 | 220 | 500 | 250159-86 | 1468-00025 | | 5W5T22 | | MCB240 | MS-32 | |
| C3 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C4 | 5000 | | 250175-1 | BPD-005 | DD-502 | K080 | 801-005 | DC-525 | 5HK-D5 | |
| C5 | 100 | 500 | 250187-53 | 1468-0001 | | 5W5T1 | | MCB235 | MS-31 | |
| C6 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C7 | 47 | 500 | 250187-49 | 1468-00005 | | 5W5Q47 | | MCB225 | MS-45 | |
| C8 | .047 | 200 | 250202-11 | P288-047 | DF-503 | PJ2S47 | | PT4147 | 2TM-S47 | |
| C9 | 15 | 500 | 250187-43 | | | 5W5Q15 | | | MS-415 | |
| C10 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C11 | 15 | 500 | 250187-43 | | | 5W5Q15 | | | MS-415 | |
| C12 | 50 | | 250088-39 | | | | | | | |
| C13 | 5000 | | 250175-1 | BPD-005 | DD-502 | K080 | 801-005 | DC-525 | 5HK-D5 | |
| C14 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C15 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C16 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C17 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C18 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C19 | .047 | 200 | 250202-11 | P288-047 | DF-503 | PJ2S47 | | PT4147 | 2TM-S47 | |
| C20 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C21 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C22 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C23 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C24A | 100 | | ♦250170-1 | ♦PA-97-1 | ♦PC-50 | ♦111TM1 | ♦1403-01 | UC-531 | ♦D-1 | |
| B | 100 | | | | | | | UC-531 | | |
| C25 | 100 | 500 | 250187-53 | 1468-0001 | | 5W5T1 | | MCB235 | MS-31 | |
| C26 | .01 | 600 | 250201-7 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C27 | 47 | 500 | 250187-49 | 1468-00005 | | 5W5Q47 | | MCB225 | MS-45 | |
| C28 | 220 | 500 | 250159-86 | 1468-00025 | | 5W5T22 | | MCB240 | MS-32 | |
| C29 | .0047 | 600 | 250201-5 | P688-0047 | D6-472 | CUB6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C30 | .01 | 600 | 250201- 7 | P688-01 | D6-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C31 | .0015 | 600 | 250201-2 | P688-0015 | D6-152 | CUB6D15 | GP2-333-152 | PT6215 | 6TM-D15 | |
| C32 | .001 | 600 | 250201-1 | P688-001 | D6-102 | CUB6D1 | GP2-333-102 | PT621 | 6TM-D1 | |
| C33 | .0047 | 600 | 250201-5 | P688-0047 | D6-472 | CUB6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C34 | .0033 | 600 | 250201-4 | P688-0033 | D6-332 | CUB6D33 | GP2-333-333 | PT6233 | 6TM-D33 | |
| C35 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C36 | 47 | 500 | 250187-49 | 1468-00005 | | 5W5Q47 | | MCB225 | MS-45 | |
| C37 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | GP2-333-103 | DC-511 | 5HK-S1 | |
| C38 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | GP2-333-103 | DC-511 | 5HK-S1 | |
| C39 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | GP2-333-103 | DC-511 | 5HK-S1 | |
| C40 | 330 | 500 | 250159-88 | 1468-0003 | | 5W5T33 | | MCB240 | MS-33 | |
| C41 | .001 | 600 | 250201-1 | P688-001 | DD-102 | CUB6D1 | GP2 L-102 | PT621 | 6TM-D1 | |
| C42 | 10000 | | 250175-2 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C43A | ■30 | 475 | 270023-2 | | | B041 | | FP376.1 | R1494 | |
| B | ▲10 | 475 | | | | | | | | |
| C44A | ■30 | 475 | 270023-2 | | | B041 | | FP376.1 | R1494 | |
| B | ▲10 | 475 | | | | | | | | |
| C45 | 20 | 25 | 270027-2 | PRS25/20 | | BR202 | | TC26 | TVA-1205 | |

(CONT'D ON NEXT PAGE)

## CHASSIS—TOP VIEW




PROPERTY OF
L. F. BLANKENSHIP
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DENVER, COLORADO

# PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS (cont)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C46 | 220 | 500 | 250207-48 | SI220 | D6-221 | TP39 | GP1K-221 | UC-5322 | 5GA-T22 | |
| C47 | .1 | 600 | 250201-13 | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C48 | .1 | 600 | 250201-13 | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C49 | .0022 | 600 | 250201-3 | P688-0022 | D6-222 | CUB6D22 | GP2-333-222 | PT6222 | 6TM-D22 | |
| C50 | 10000 | 1000 | 250219-2 | BPD-01 | DD-103 | K082 | GP2-333-103 | DC-511 | 5HK-S1 | |
| C51 | 10000 | 1000 | 250219-2 | BPD-01 | DD-103 | K082 | GP2-333-103 | DC-511 | 5HK-S1 | |
| C52 | .047 | 600 | 250201-11 | P688-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | Note 1 |
| C53 | 1.0 | 200 | P484-1.0 | | | PJ2W1 | | PT41 | 2TM-M1 | |
| C54 | 1.0 | 200 | P484-1.0 | | | PJ2W1 | | PT41 | 2TM-M1 | |
| C55 | 1.0 | 200 | P484-1.0 | | | PJ2W1 | | PT41 | 2TM-M1 | |
| C56 | 1.0 | 200 | P484-1.0 | | | PJ2W1 | | PT41 | 2TM-M1 | |

Note 1. Some models may use an .01MFD ⓐ 1000V in this application.

♦ C24A, C24B and R24 are combined in one unit.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | MAGNAVOX PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 1Meg | ½ | 220073-18 | A13-137 | A47-1Meg-Z | B-70-S | U-53 | Bass |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWE-12 | Not Req. | US-26 | Attach to R1A |
| R2A | 1Meg | ½ | D220072G18 | Q13-137 | A47-1Meg-Z | B-70 | U-53 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R2A |
| R3A | 1Meg | ½ | D220071G4 | | | AB-68 | | Treble |
| B | Shaft | | Not Req. | | | AK-3 | | Attach to R3A |
| C | Switch | | Not Req. | | | KB-3 | | Attach to R3A |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | MAGNAVOX PART No. | IRC PART No. | |
| R4 | 10KΩ | ½ | 230104-74 | BTS-10K | |
| R5 | 68Ω | ½ | 230104-48 | BTS-68 | |
| R6 | 4700Ω | ½ | 230104-70 | BTS-4700 | |
| R7 | 47KΩ | 1 | 230105-82 | BTA-47K | |
| R8 | 1000Ω | ½ | 230104-62 | BTS-1000 | |
| R9 | 1Meg | ½ | 230104-98 | BTS-1Meg | |
| R10 | 1Meg | ½ | 230104-98 | BTS-1Meg | |
| R11 | 33Ω | ½ | 230104-44 | BTS-33 | |
| R12 | 1Meg | ½ | 230104-98 | BTS-1Meg | |
| R13 | 68Ω | ½ | 230104-48 | BTS-68 | |
| R14 | 22KΩ | ½ | 230104-78 | BTS-22K | |
| R15 | 4700Ω | ½ | 230104-70 | BTS-4700 | |
| R16 | 1000Ω | ½ | 230104-62 | BTS-1000 | |
| R17 | 100Ω | ½ | | BTS-100 | |
| R18 | 1000Ω | ½ | 230104-62 | BTS-1000 | |
| R19 | 1000Ω | ½ | 230104-62 | BTS-1000 | |
| R20 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R21 | 470KΩ | ½ | 230104-94 | BTS-470K | |
| R22 | 1Meg | ½ | 230104-98 | BTS-1Meg | |
| R23 | 47KΩ | ½ | 230104-82 | BTS-47K | |
| R24 | 47KΩ | ½ | ♦250170-1 | BTS-47K | |
| R25 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R26 | 3300Ω | ½ | | BTS-3300 | |
| R27 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R28 | 8200Ω | 1 | 230105-73 | BTA-8200 | |
| R29 | 8200Ω | 1 | 230105-73 | BTA-8200 | |
| R30 | 100KΩ | ½ | 230104-86 | BTS-100K | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | MAGNAVOX PART No. | IRC PART No. | |
| R31 | 68KΩ | ½ | 230104-84 | BTS-68K | |
| R32 | 6500Ω | ½ | 240035-9 | | |
| R33 | 1500Ω | 1 | 230105-68 | BTA-1500 | |
| R34 | 3300Ω | ½ | 230104-68 | BTS-3300 | |
| R35 | 100KΩ | ½ | 230104-86 | BTS-100K | |
| R36 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R37 | 47KΩ | ½ | 230104-82 | BTS-47K | |
| R38 | 150KΩ | ½ | 230104-88 | BTS-150K | |
| R39 | 150KΩ | ½ | 230104-88 | BTS-150K | |
| R40 | 100KΩ | ½ | 230104-86 | BTS-100K | |
| R41 | 470KΩ | ½ | 230104-94 | BTS-470K | |
| R42 | 3300Ω | ½ | 230104-68 | BTS-3300 | |
| R43 | 220Ω | ½ | 230104-54 | BTS-220 | |
| R44 | 470KΩ | ½ | 230104-94 | BTS-470K | |
| R45 | 20KΩ | ½ | 230094-190 | BTS-20K | |
| R46 | 8200Ω | ½ | 230104-73 | BTS-8200 | |
| R47 | 470KΩ | ½ | 230104-95 | BTS-470K | |
| R48 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R49 | 100Ω | ½ | 230104-50 | BTS-100 | |
| R50 | 100Ω | ½ | 230104-50 | BTS-100 | |
| R51 | 100Ω | ½ | 230104-50 | BTS-100 | |
| R52 | 2700Ω | ½ | 230104-67 | BTS-2700 | |
| R53 | 220KΩ | ½ | 230104-90 | BTS-220K | |
| R54 | 100Ω | ½ | 230104-50 | BTS-100 | |
| R55 | 125Ω | 10 | 240021-11 | 1 3/4A-125 | |
| R56 | 100KΩ | 1 | 230105-86 | BTA-100K | |

♦ Items R24, C24A, C24B, are combined in one unit.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | MAGNAVOX PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 117VAC ⓐ 1.26A | 574VCT .190ADC | 5VAC ⓐ 4A | 6.3VAC ⓐ 4.64A | 300071-1 | P-8332①② | P-3077 | | | |

① Drill new mounting holes.

② Tape 6.3V ⓐ 1.2A and .9A windings.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | MAGNAVOX PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 3.9KΩ CT | 3Ω tap ⓐ 1.5Ω | 330024-1 | | | | | | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | MAGNAVOX PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 12" | PM | 6Ω | 583641-1 | | 12A10LR | |
| SP2 | 12" | PM | 6Ω | 583660-1 | | 12A1 | |
| SP3 | 5" | PM | 3.2Ω | 580038-1 | | | |
| SP4 | 5" | PM | 3.2Ω | 580038-1 | | | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | MAGNAVOX PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | FM Ant. Coil | 0Ω | 0Ω | 360321-2 | | | | |
| L2 | FM RF Choke | .4Ω | | 360284-1 | 19-1003 | | 4608 | 5 Microhenries |
| L3 | FM RF Coil | 0Ω | | 360322-2 | | | | Tapped |
| L4 | FM Osc. Coil | 0Ω | | 360323-1 | | | | Tapped |
| L5 | AM Loop Ant. AM Ant. Loading Coil | 7.5Ω | | 460837-1 | | | | Assembly includes AM loop ant., AM ant. loading coil & 2200Ω resistor |
| L6 | AM RF Coil | 2.3Ω | 3.4Ω | 360348-1 | | | A-5495-RF | |
| L7 | AM Osc. Coil | 4.6Ω | | 360407-1 | 14-1033 | BC-381 | 71-Osc. | Tapped ⓐ .5Ω |
| L8 | 1st. FM IF | .7Ω | .7Ω | 360374-1 | 16-3487 | FM-254 | 1463 | |
| L9 | AM Input | 10Ω | 10Ω | 360508-1 | | | | .5Ω |
| L10 | 2nd. FM IF | .7Ω | .7Ω | 360374-1 | 16-3487 | FM-254 | 1463 | |
| L11 | AM Output | 11Ω | 11Ω | 360373-1 | 16-6758 | BC-353 | 12-C2 | |
| L12 | 3rd. FM IF | 1.2Ω | 1.2Ω | 360374-1 | 16-3487 | FM-254 | 1463 | |
| L13 | Discriminator | .5Ω | 1.5Ω | 360375-1 | 17-3484 * | FM-253 | 1464 | |
| L14 | RF Choke | 0Ω | | | | | | |
| L15 | RF Choke | 0Ω | | | | | | |

* Enlarge chassis hole and drill mounting holes.

## 10KC FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL DIRECT CURRENT | D. C. RESISTANCE | INDUCTANCE (0 CURRENT 1000 ∿) | MAGNAVOX PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| L16 | | 200Ω | | 360244-2 | | | | | |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL DIRECT CURRENT | D. C. RESISTANCE | INDUCTANCE (0 CURRENT 1000 ∿) | MAGNAVOX PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| L17 | .190ADC | 51Ω | 1Hy | 320041-2 | C-2327 | C-2996 ① | C-21X ① | C5040 | 26C41 |

① Drill one new mounting hole.

## PHONO CARTRIDGE

| ITEM No. | REPLACEMENT DATA | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|
| | MAGNAVOX PART No. | ASTATIC PART No. | | SHURE PART No. | | ELECTRO-VOICE PART No. | | |
| | | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | |
| M1 | 560151-5 | | | | | | | |

## PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

| ITEM No. | REPLACEMENT DATA | | | | REMARKS |
|---|---|---|---|---|---|
| | MAGNAVOX PART No. | JENSEN PART No. | PERMO PART No. | WALCO PART No. | |
| M2 | 560167 | M-47 or M-49 | *AC-351 | *W-52TPA or †W-52TPS | * Metal |

## MISCELLANEOUS

| ITEM No. | PART NAME | MAGNAVOX PART No. | NOTES |
|---|---|---|---|
| M3 | Dial Light | | #44, Bayonet (2 used) |
| M4 | Tuning capacitor | 260103-1 | 12-490MMF; 30-490MMF; 17-188MMF |
| M5 | Switch | 160194-3 | Selector |
| | Dial glass | 150330-2 | |
| | Dial pointer | 102426-2 | |

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DON McGOHAN
MODEL MG60

DON McGOHAN
MODEL MG60

| | |
|---|---|
| TRADE NAME | Don McGohan Model MG60 |
| MANUFACTURER | Don McGohan, Inc., 3700 W. Roosevelt Rd., Chicago 24, Ill. |
| TYPE SET | AC Operated 3 Channel Audio Amplifier |
| TUBES (Ten) | Types (3) 6SJ7 Pre-Amp., 6SN7GTA AF Amp-Phase Inv., (4) 6L6G Audio Output, (2) 5U4G Rectifier |
| POWER SUPPLY | 110-120 Volts AC-60 Cycles RATING 2.2 Amp. @ 117 Volts AC |

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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# PARTS LIST AND DESCRIPTIONS

DON MC GOHAN
MODEL MG60

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | Don McGohan PART No. | STANDARD REPLACEMENT | | |
| V1 | Pre-Amplifier | 6SJ7 | 6SJ7 | 8N | |
| V2 | Pre-Amplifier | 6SJ7 | 6SJ7 | 8N | |
| V3 | AF Amplifier | 6SJ7 | 6SJ7 | 8N | |
| V4 | AF Amplifier-Phase Inv. | 6SN7GTA | 6SN7GTA | 8BD | |
| V5 | Audio Output | 6L6G | 6L6G | 7S | |
| V6 | Audio Output | 6L6G | 6L6G | 7S | |
| V7 | Audio Output | 6L6G | 6L6G | 7S | |
| V8 | Audio Output | 6L6G | 6L6G | 7S | |
| V9 | Rectifier | 5U4G | 5U4G | 5T | |
| V10 | Rectifier | 5U4G | 5U4G | 5T | |

## CAPACITORS

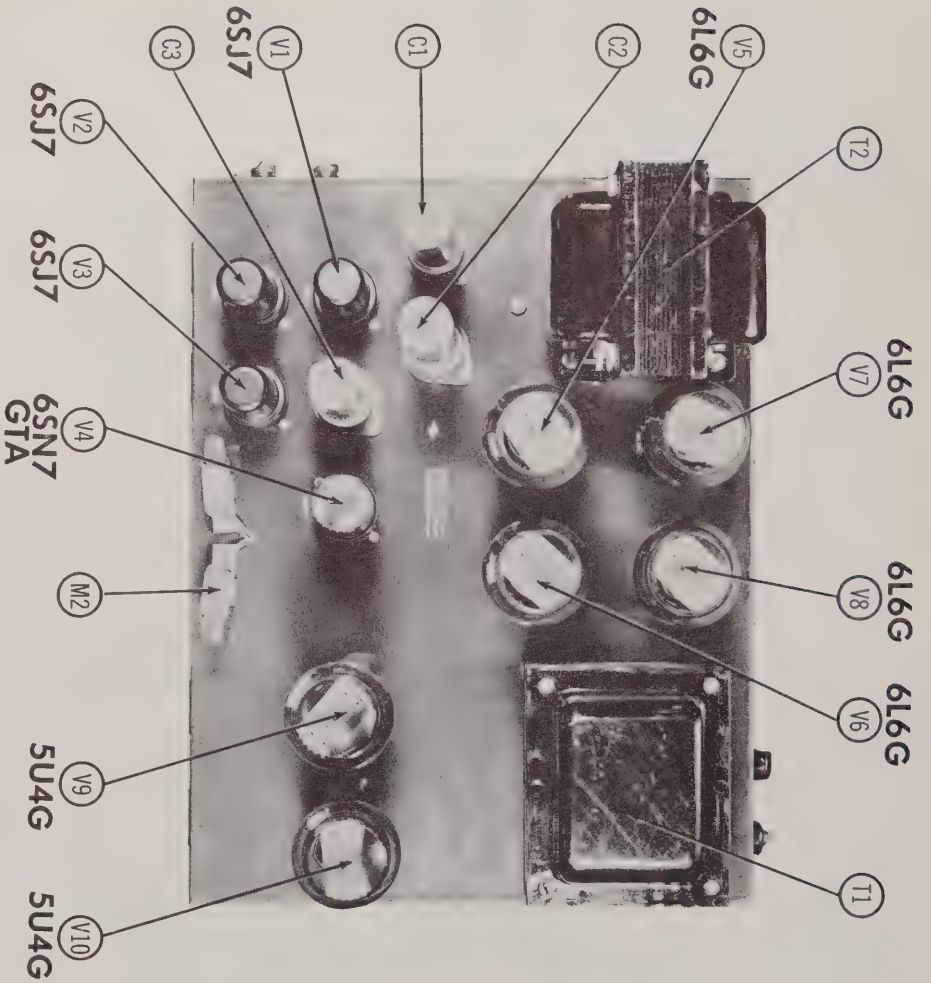
**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | Don McGohan PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▲20 | 475 | | AFH1-59 | | | | | | |
| B | ■20 | 475 | | PRS500/16 | | | | | | |
| C2A | ▲20 | 475 | | AFH1-59 | | | | | | |
| B | ■20 | 475 | | PRS500/16 | | | | | | |
| C3A | ▲10 | 475 | | AFH2-67 | | B049 | | FP394 | TVL-3835 | |
| B | ■10 | 475 | | | | | | | | |
| C4 | 100 | 50 | | PRS50/100 | | BRH501 | | TC3501 | TVA-1310 | |
| C5 | 10 | 50 | | PRS50/10 | | BR105 | | TC32 | TVA-1304 | |
| C6 | .02 | 600 | | P688-02 | DF-203 | CUB6S2 | | PT612 | 6TM-S2 | |
| C7 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C8 | .02 | 600 | | P688-02 | DF-203 | CUB6S2 | | PT612 | 6TM-S2 | |
| C9 | .02 | 600 | | P688-02 | DF-203 | CUB6S2 | | PT612 | 6TM-S2 | |
| C10 | .02 | 600 | | P688-02 | DF-203 | CUB6S2 | | PT612 | 6TM-S2 | |
| C11 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C12 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C13 | 5000 | | | BPD-005 | DD-502 | K080 | 801-005 | DC-525 | 5HK-D5 | |
| C14 | 1000 | | | SII000 | D6-102 | TP52 | GP2K-120 | UC-521 | 5GA-D1 | |
| C15 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C16 | .1 | 600 | | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESIST-ANCE | WATTS | Don McGohan PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 500KΩ | ½ | BA011-301 | Q13-133 | AG-60- Z | B-60 | U-48 | Mike Volume #1 |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R1A |
| R2A | 500KΩ | ½ | BA011-301 | Q13-133 | AG-60-Z | B-60 | U-48 | Mike Volume #2 |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R2A |
| R3A | 500KΩ | ½ | BA011-301 | Q13-133 | AG-60-Z | B-60 | U-48 | Phono Volume |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R3A |
| R4A | 500KΩ | ½ | BA011-301 | Q13-133 | AG-60-Z | B-60 | U-48 | Treble |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R4A |
| R5A | 500KΩ | ½ | BA011-301 | Q13-133 | AG-60-Z | B-60 | U-48 | Bass |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R5A |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | Don McGohan PART No. | IRC PART No. | |
| R6 | 10Meg | ½ | | BTS-10Meg | |
| R7 | 1Meg | ½ | | BTS-1Meg | |
| R8 | 220KΩ | ½ | | BTS-220K | |
| R9 | 10Meg | ½ | | BTS-10Meg | |
| R10 | 220KΩ | ½ | | BTS-220K | |
| R11 | 470KΩ | ½ | | BTS-470K | |
| R12 | 470KΩ | ½ | | BTS-470K | |
| R13 | 470KΩ | ½ | | BTS-470K | |
| R14 | 1500Ω | ½ | | BTS-1500 | |
| R15 | 330KΩ | ½ | | BTS-330K | |
| R16 | 100KΩ | ½ | | BTS-100K | |
| R17 | 22KΩ | ½ | | BTS-22K | |
| R18 | 33KΩ | 1 | | BTA-33K | |
| R19 | 100KΩ | ½ | | BTS-100K | |
| R20 | 1500Ω | ½ | | BTS-1500 | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | Don McGohan PART No. | IRC PART No. | |
| R21 | 47KΩ | 1 | | BTA-47K | |
| R22 | 1500Ω | ½ | | BTS-1500 | |
| R23 | 47KΩ | 1 | | BTA-47K | |
| R24 | 12KΩ | ½ | | BTS-12K | |
| R25 | 10KΩ | ½ | | BTS-10K | |
| R26 | 100KΩ | ½ | | BTS-100K | |
| R27 | 22Ω | 1 | | | |
| R28 | 100KΩ | ½ | | BTS-100K | |
| R29 | 22Ω | 1 | | | |
| R30 | 10KΩ | ½ | | BTS-10K | |
| R31 | 100Ω | 20 | | 2D-100 | |
| R32 | 10KΩ | ½ | | BTS-10K | |
| R33 | 33KΩ | 1 | | BTA-33K | |
| R34 | 18KΩ | 10 | | 1 3/4A-18K | |
| R35 | 2500Ω | 10 | | 1 3/4A-2500 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | Don McGohan PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 117VAC @2.2A | 746VCT .270ADC | 5VAC @6A | 6.3VCT @5.5A | | P-8156 ④ | P-3053 ① ②③ | R-37BC ⑤ | | |

① Use high voltage taps only for Sec. #1.
② Parallel 5V windings for 6Amps.
③ Use only one 6.3V winding @ 7A.
④ Drill new mounting holes and use ½ of 12.6V winding.
⑤ Use high current 6.3V filament winding.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Don McGohan PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 10.4KΩ CT | 500Ω tap @ 250Ω, 70V, 16Ω, 8Ω 4Ω | | | | | | | |

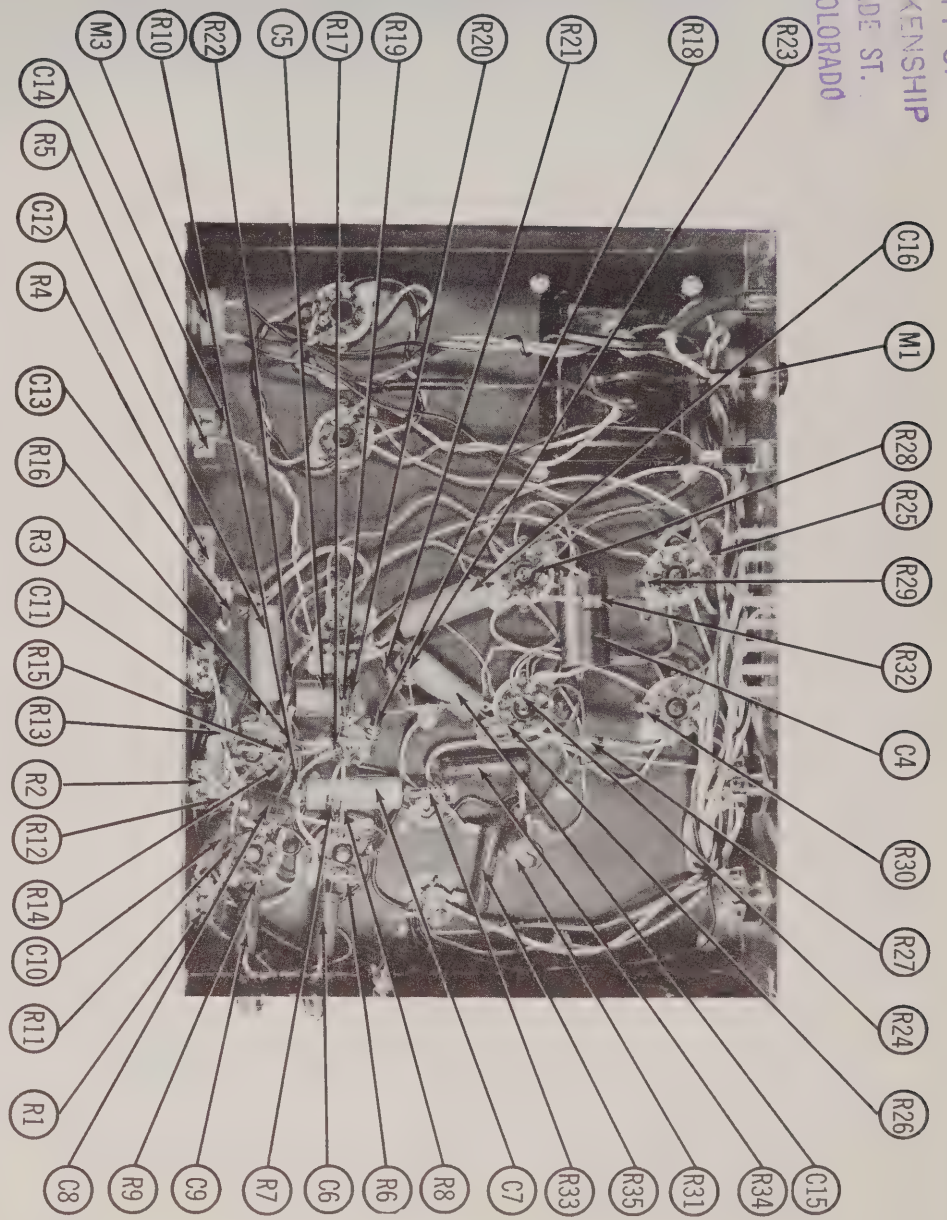
## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Don McGohan PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 5A | | | 312005 (3AG-5A) | 342001 | MTH5 | HKP |

## MISCELLANEOUS

| ITEM No. | PART NAME | Don McGohan PART No. | NOTES |
|---|---|---|---|
| M2 | Dial Light | | #47 Bayonet (2 used) |
| M3 | Switch | | Power |

## CHASSIS—BOTTOM VIEW

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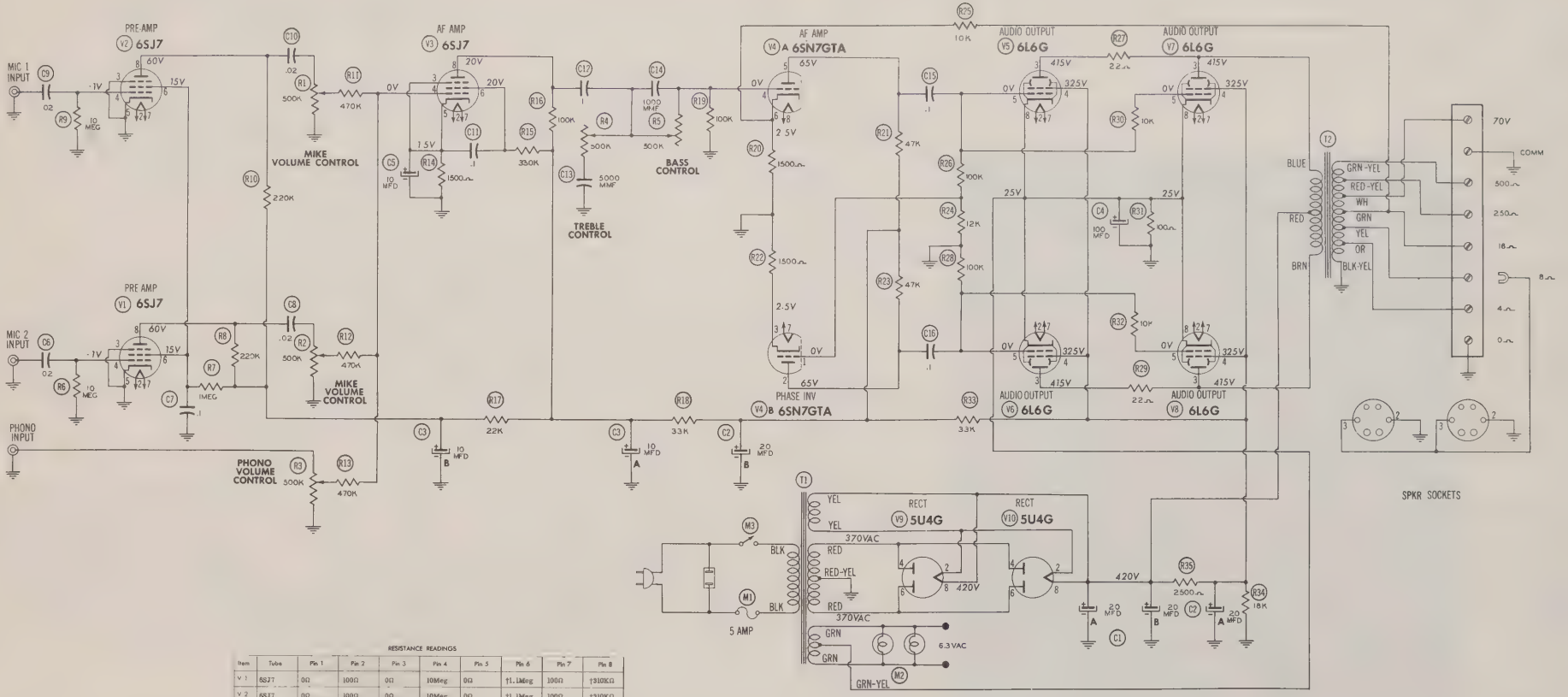
DON MC GOHAN MODEL MG60




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6SJ7 | 0Ω | 100Ω | 0Ω | 10Meg | 0Ω | †1.1Meg | 100Ω | †310KΩ |
| V 2 | 6SJ7 | 0Ω | 100Ω | 0Ω | 10Meg | 0Ω | †1.1Meg | 100Ω | †310KΩ |
| V 3 | 6SJ7 | 0Ω | 100Ω | 1.5KΩ | 180KΩ | 1.5KΩ | †400KΩ | 100Ω | †170KΩ |
| V 4 | 6SN7GT | 12KΩ | †80KΩ | 1.5KΩ | 100KΩ | †80KΩ | 1.5KΩ | 100Ω | 100Ω |
| V 5 | 6L6G | 0Ω | 100Ω | †68Ω | †2.5KΩ | 112KΩ | 12KΩ | 100Ω | 100Ω |
| V 6 | 6L6G | 0Ω | 100Ω | †68Ω | †2.5KΩ | 100KΩ | 1.5KΩ | 100Ω | 100Ω |
| V 7 | 6L6G | 0Ω | 100Ω | †40Ω | †2.5KΩ | 122KΩ | 112KΩ | 100Ω | 100Ω |
| V 8 | 6L6G | 0Ω | 100Ω | †40Ω | †2.5KΩ | 116KΩ | 100KΩ | 100Ω | 100Ω |
| V 9 | 5U4G | INF | 22KΩ | INF | 26Ω | INF | 25Ω | INF | 22KΩ |
| V 10 | 5U4G | INF | 22KΩ | INF | 25Ω | INF | 25Ω | INF | 22KΩ |

ALL CONTROLS SET AT MINIMUM.
† MEASURED FROM PIN 2 OF V9.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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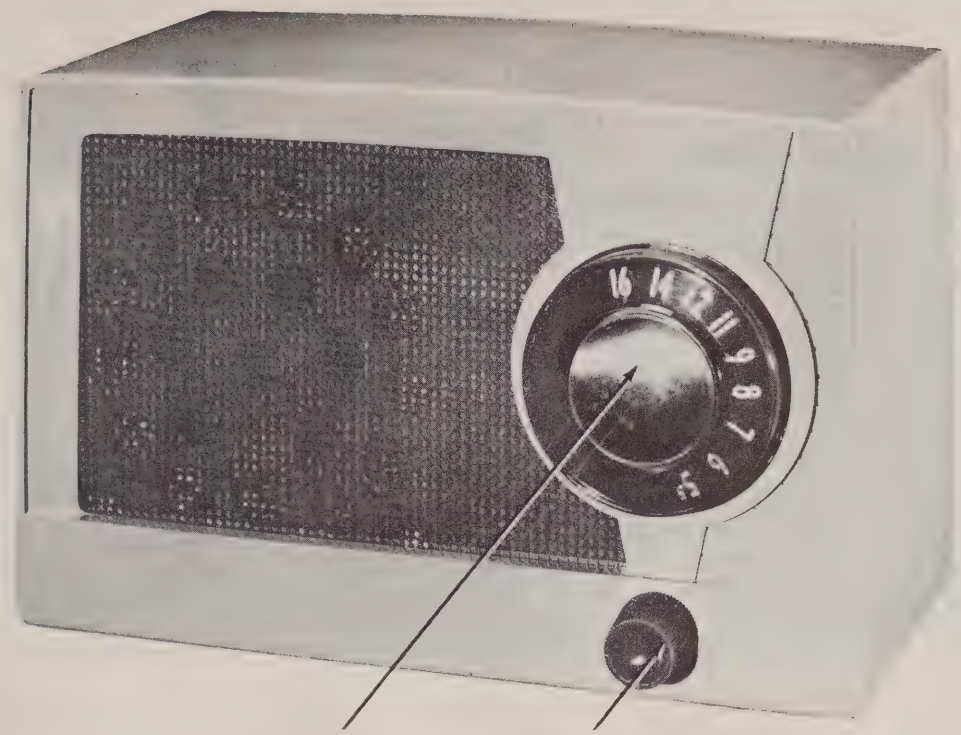
MITCHELL
MODELS 1271, 1272, 1273




MITCHELL
MODELS 1271, 1272, 1273

| | |
|---|---|
| TRADE NAME | Mitchell Models 1271, 1272, 1273 |
| MANUFACTURER | Mitchell Mfg., 2525 Clybourn Ave., Chicago 14, Ill. |
| TYPE SET | AC-DC Operated AM Superheterodyne Receiver |
| TUBES (Five) | Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Output, 35Z5GT Rectifier |
| POWER SUPPLY | 110-120 Volts AC/DC — RATING .24 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 540-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to antenna stator lug on tuning gang. Low side to B-. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3 | Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. |
| 2. | | Loop | 1620KC | " | " | A4 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 1400KC | Tune to 1400KC signal | " | A5 | " |
| 6. | | " | 600KC | Tune to 600KC signal | " | | If necessary bend slotted antenna rotor plates for maximum output. Repeat step 3. |



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# PARTS LIST AND DESCRIPTIONS

MITCHELL MODEL 1271

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: MITCHELL PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12SA7 | 12SA7 | 8R | |
| V2 | IF Amplifier | 12SK7 | 12SK7 | 8N | |
| V3 | Det.-AVC-AF Amp | 12SQ7 | 12SQ7 | 8Q | |
| V4 | Output | 50L6GT | 50L6GT | 7S | |
| V5 | Rectifier | 35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: MITCHELL PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 50 | 150 | N-7889 | PRS150/50-30 | | BBRD5315 | | 2N520 | TVA-2450 | Blue Red |
| B | 30 | 150 | | | | | | | | |
| C2 | .05 | 200 | N-1345 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C3 | .05 | 200 | N-1345 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C4 | 100 | | N-6015 | SI100 | D6-101 | TP34 | GP1K-101 | UC-531 | 5GA-T1 | Note 1 |
| C5 | 100 | | | | | | | | | |
| C6A | 10000 | | ♦N-8215 | ♦PA-112-4 | ♦PC-81 | ♦1l2TM2 *K080 | ♦1406-02 | | ♦T-4 | |
| B | 250 | | | | | | | | | |
| C | | | | | | | | | | |
| C7 | .01 | 400 | N-1344 | P488-01 | D6-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C8 | .05 | 400 | N-1346 | 489ZX-05 | DF-503 | PJ4S5 | | PT415 | 4TM-S5 | |
| C9 | .05 | 200 | N-1345 | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C10 | .005 | 600 | | P688-005 | D6-502 | CUB6D5 | GP2-333-502 | PT625 | 6TM-D5 | |

Note 1. Not used in all Models.

♦ Items C6A, C6B, C6C, R6A and R6B are combined in one unit. When replacing items individually, items C6B and C6C should total 250MMF.

* Connect K080 across terminals 2 and 3 of C-R unit.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: MITCHELL PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ with 40KΩ stop | ½ | N-7890 | Q13-133 | A47-500K-Z | BSK-60-S | U-48 | Volume - Note |
| B | Shaft | | Not Req. | Not Req. | KSS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWE-12 | Not Req. | US-26 | Attach to R1A |

Note. Connect a 39KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (control viewed from shaft end, terminals down).

## RESISTORS

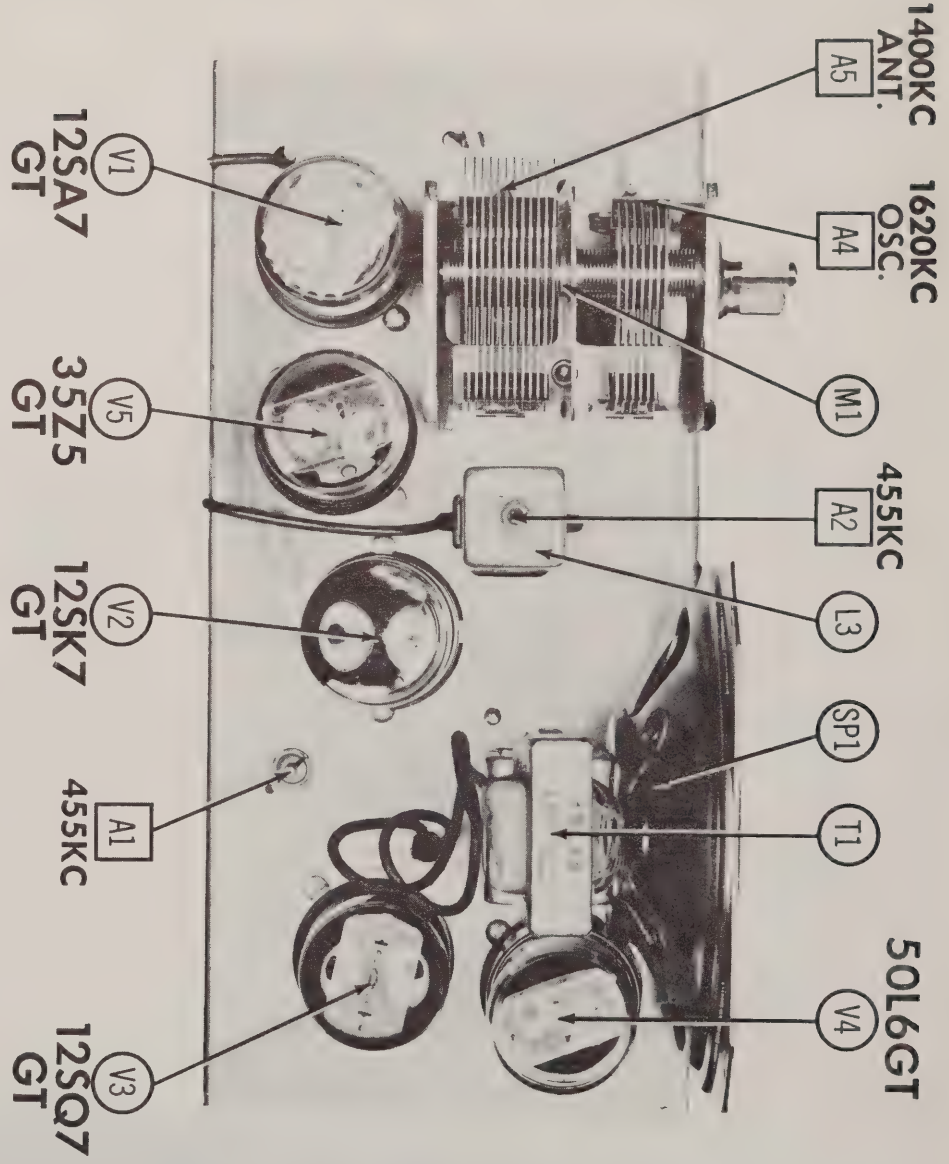
| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: MITCHELL PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 22KΩ | ½ | N-4025 | BTS-22K | |
| R3 | 1Meg | ½ | N-1262 | BTS-1Meg | |
| R4 | 47KΩ | ½ | N-4063 | BTS-47K | Note |
| R5 | 6.8Meg | ½ | N-4028 | BTS-6.8Meg | |
| R6A | 220KΩ | ½ | ♦N-8215 | BTS-220K | |
| B | 470KΩ | ½ | | BTS-470K | |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: MITCHELL PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7 | 1200Ω | 1 | N-4900 | BTA-1200 | |
| R8 | 220KΩ | ½ | N-4026 | BTS-220K | |
| R9 | 220Ω | ½ | N-4024 | BTS-220 | |

Note. Not used in all models.

♦ Items R6A, R6B, C6A, C6B, C6C are combined in one unit.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | MITCHELL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T1 | 2.6KΩ | 170Ω | Part of Spkr. | A-3332 ① | A-3025 ① | S-12X① | Z1101 ① | | ① Bend mounting tabs down, file out slots, mount on original mounting bracket. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | MITCHELL PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.7Ω | N-7824 | ST-113 (Mod. P4-X) | 4A1 | |

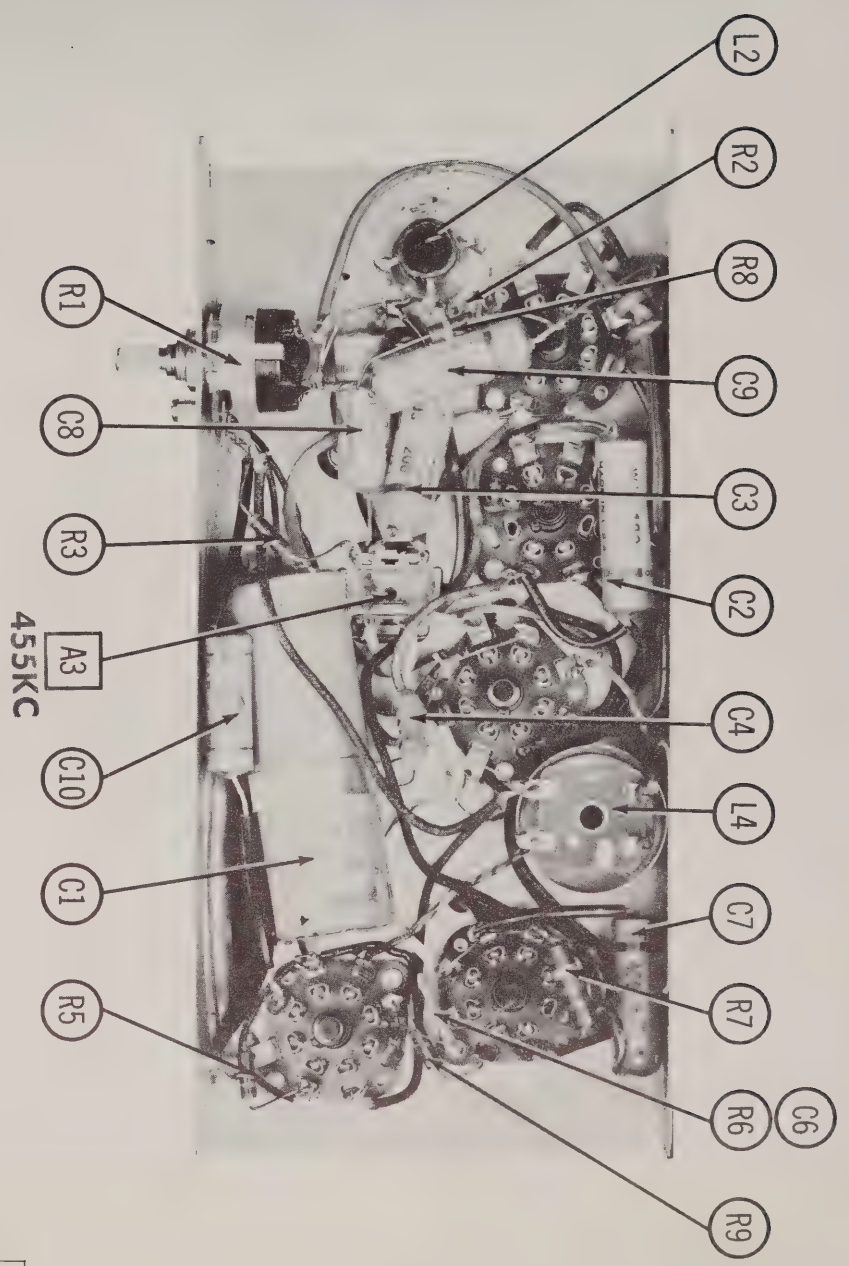
## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | MITCHELL PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Loop Ant. | 2.9Ω | | N-8138 | | | | Includes cabinet back Tertiary winding |
| L2 | Osc. Coil | .6Ω | 7Ω | N-7139 | 14-1073 | | 69-Osc. 12-C1 | |
| L3 | Input IF | 14Ω | 14Ω | N-7981 | 16-6758 | BC-352 | | |
| L4 | Output IF | 20Ω | 20Ω | N-7542 | | | | |

## MISCELLANEOUS

| ITEM No. | PART NAME | MITCHELL PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | N-7141 | 18-397MMF, 18-153MMF |

# CHASSIS—BOTTOM VIEW

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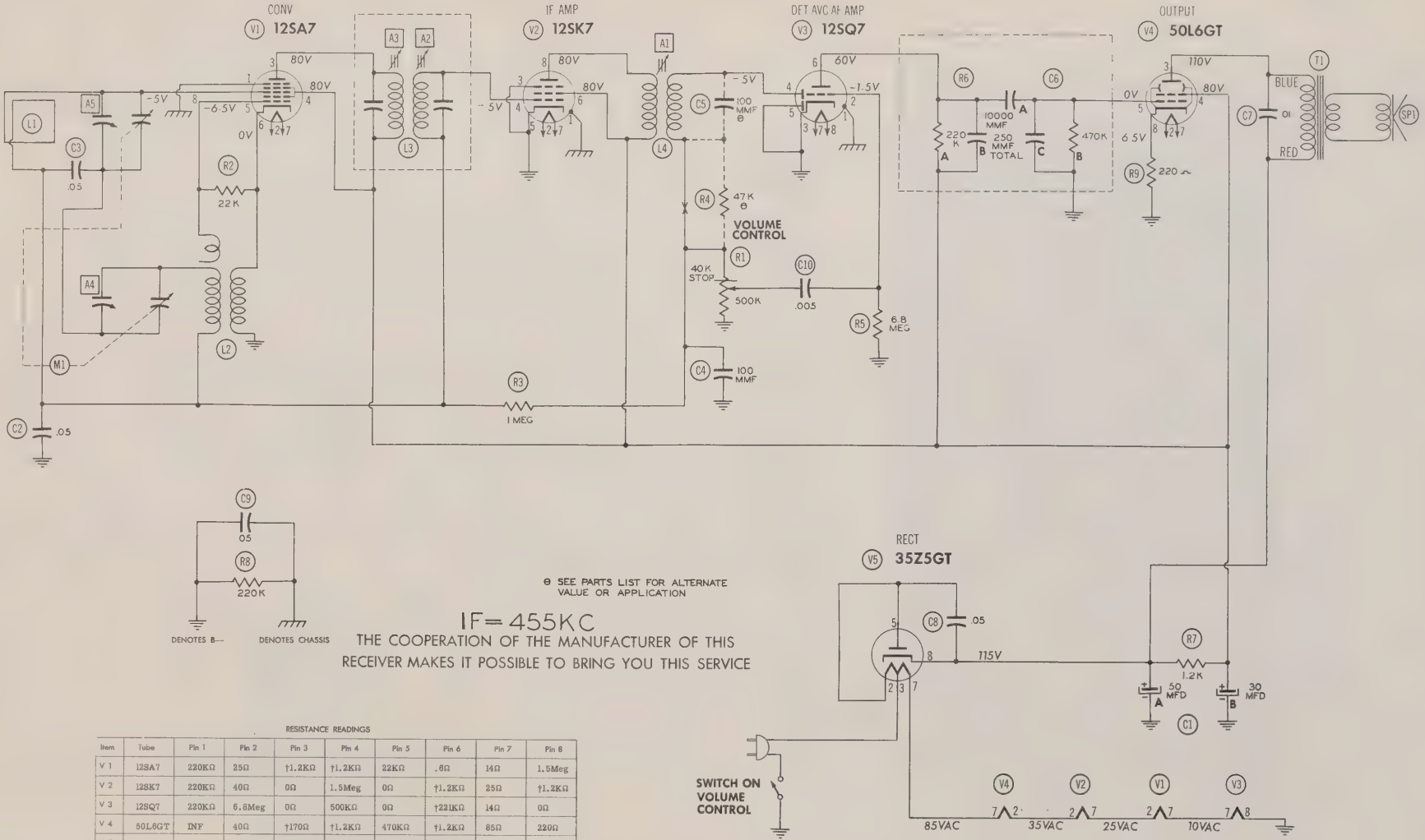
MITCHELL MODEL 1271




θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

## IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 12SA7 | 220KΩ | 25Ω | †1.2KΩ | †1.2KΩ | 22KΩ | .6Ω | 14Ω | 1.5Meg |
| V 2 | 12SK7 | 220KΩ | 40Ω | 0Ω | 1.5Meg | 0Ω | †1.2KΩ | 25Ω | †1.2KΩ |
| V 3 | 12SQ7 | 220KΩ | 6.8Meg | 0Ω | 500KΩ | 0Ω | †221KΩ | 14Ω | 0Ω |
| V 4 | 50L6GT | INF | 40Ω | †170Ω | †1.2KΩ | 470KΩ | †1.2KΩ | 85Ω | 220Ω |
| V 5 | 35Z5GT | INF | 120Ω | 115Ω | INF | 120Ω | INF | 85Ω | 50KΩ |

† MEASURED FROM PIN 8 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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RETMA MEMBER

# PACKARD-BELL MODELS 1841, 1842, 1941, 1942 (Ch. 1840)

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PACKARD-BELL MODELS
1841, 1842, 1941, 1942 (Ch. 1840)

MODEL 1841

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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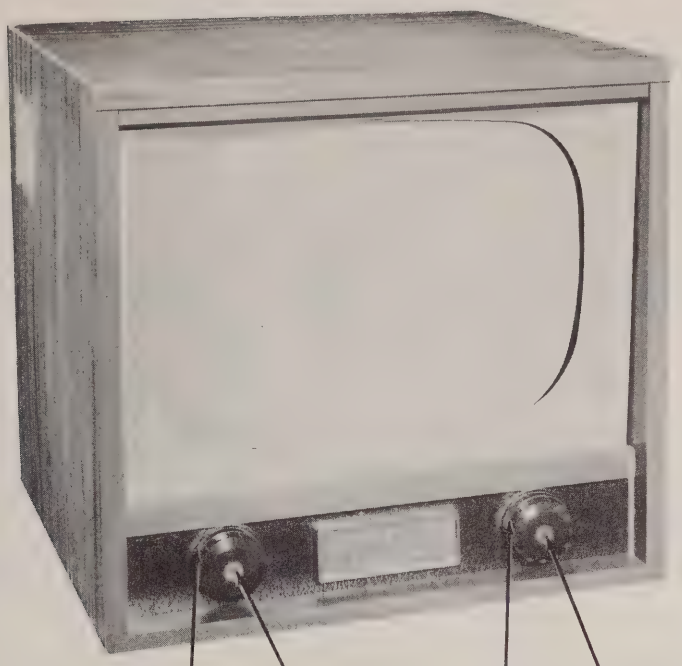


PACKARD-BELL MODEL 1841

| | |
|---|---|
| TRADE NAME | Packard-Bell Models 1841, 1842, 1941, 1942 (Ch. 1840) |
| MANUFACTURER | Packard-Bell Co., Service Dept., 11th & Hope Streets, Los Angeles 15, Calif. |
| TYPE SET | Television Receiver |
| TUBES | Eighteen |
| POWER SUPPLY | 110-120 Volts AC-60 Cycle RATING 1.5 Amp. @ 117 Volts AC |
| TUNING RANGE | Channels 2 thru 13 VFH, 14 thru 83 UHF, Video IF 45.75 MC, Sound IF 41.25MC (Intercarrier) |

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PACKARD-BELL MODELS
1841, 1842, 1941, 1942 (Ch. 1840)

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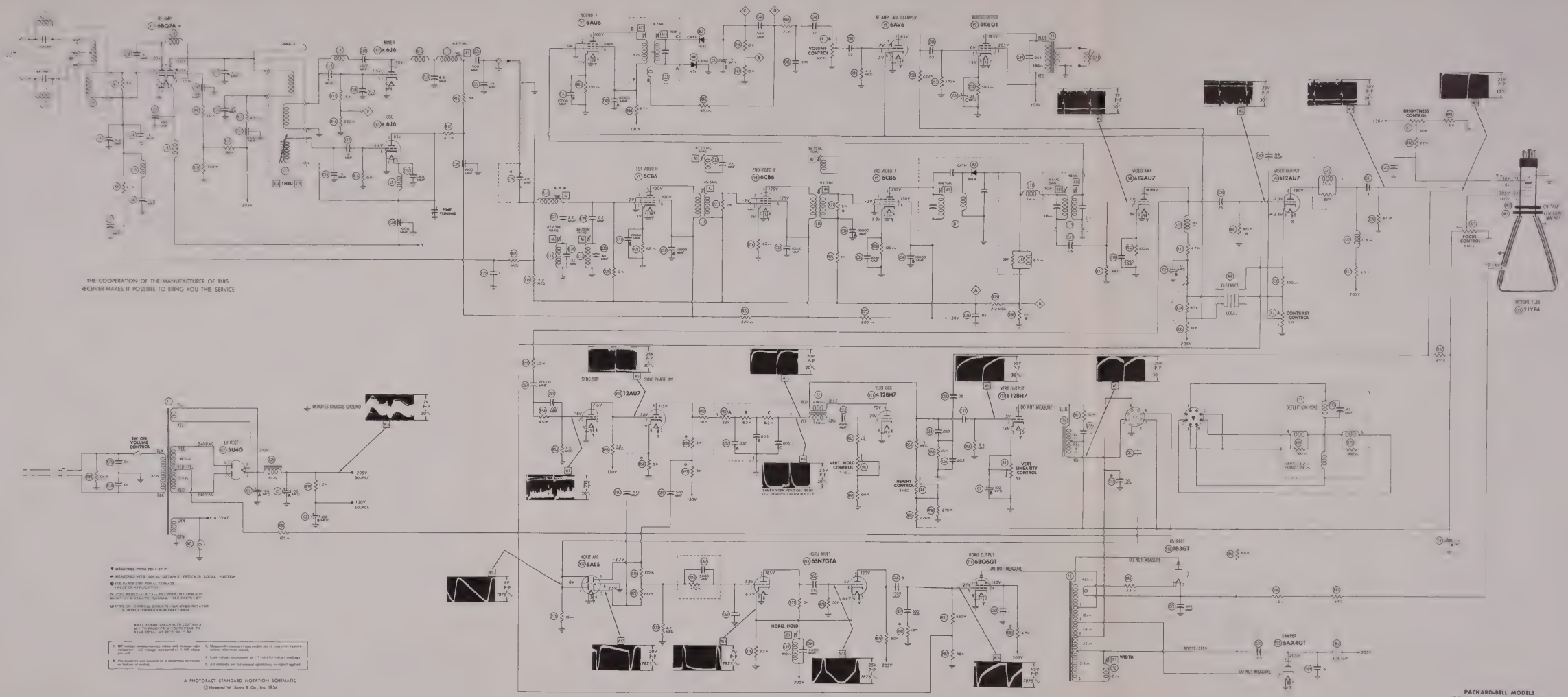
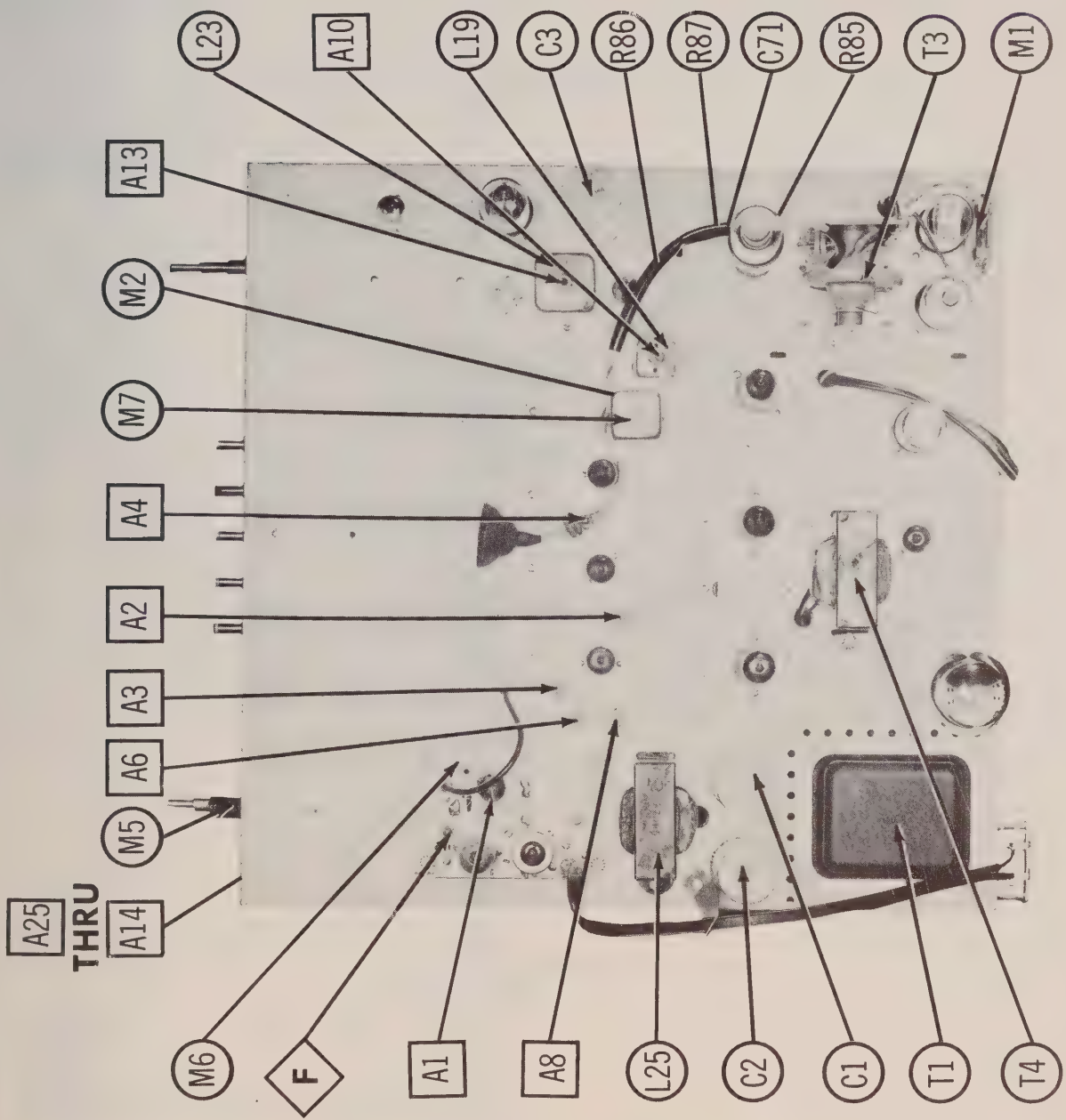



PACKARD-BELL MODELS
1841, 1842, 1941, 1942 (Ch. 1840)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS TOP VIEW



PROPERTY OF
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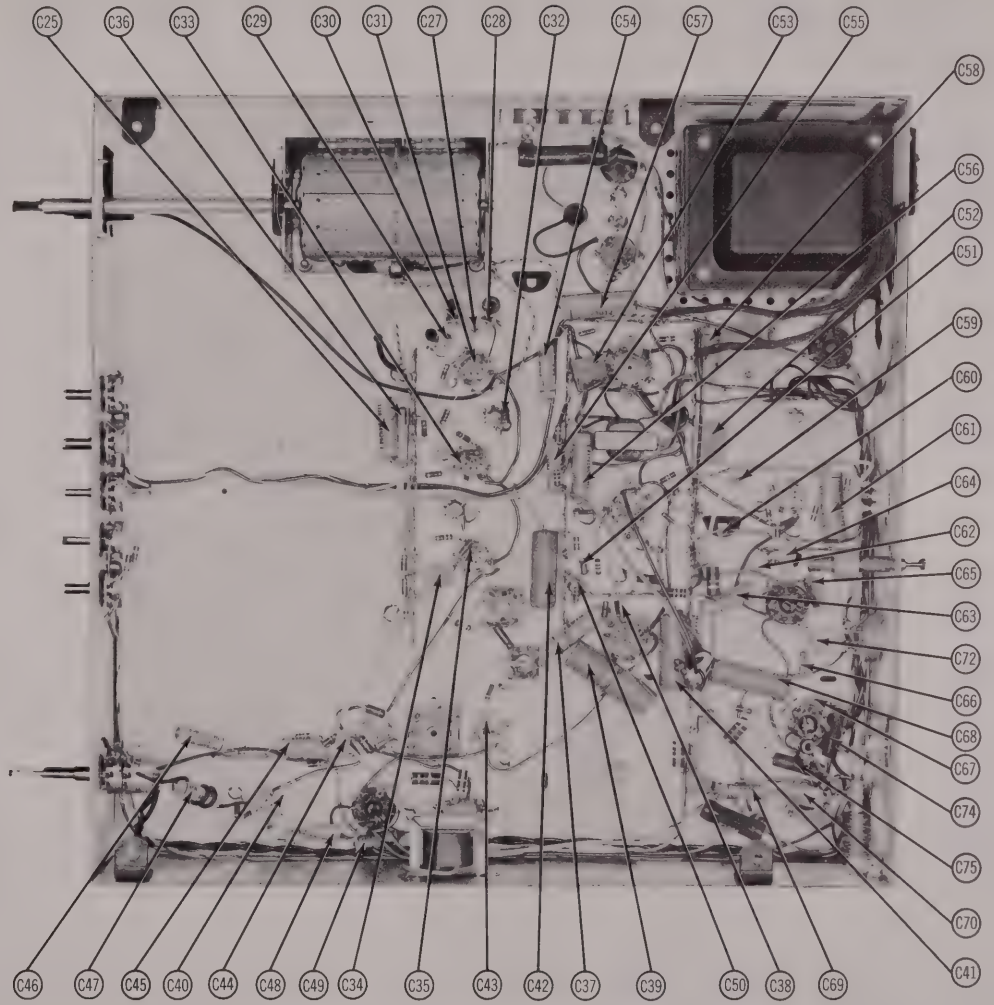


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

# TUBE PLACEMENT CHART

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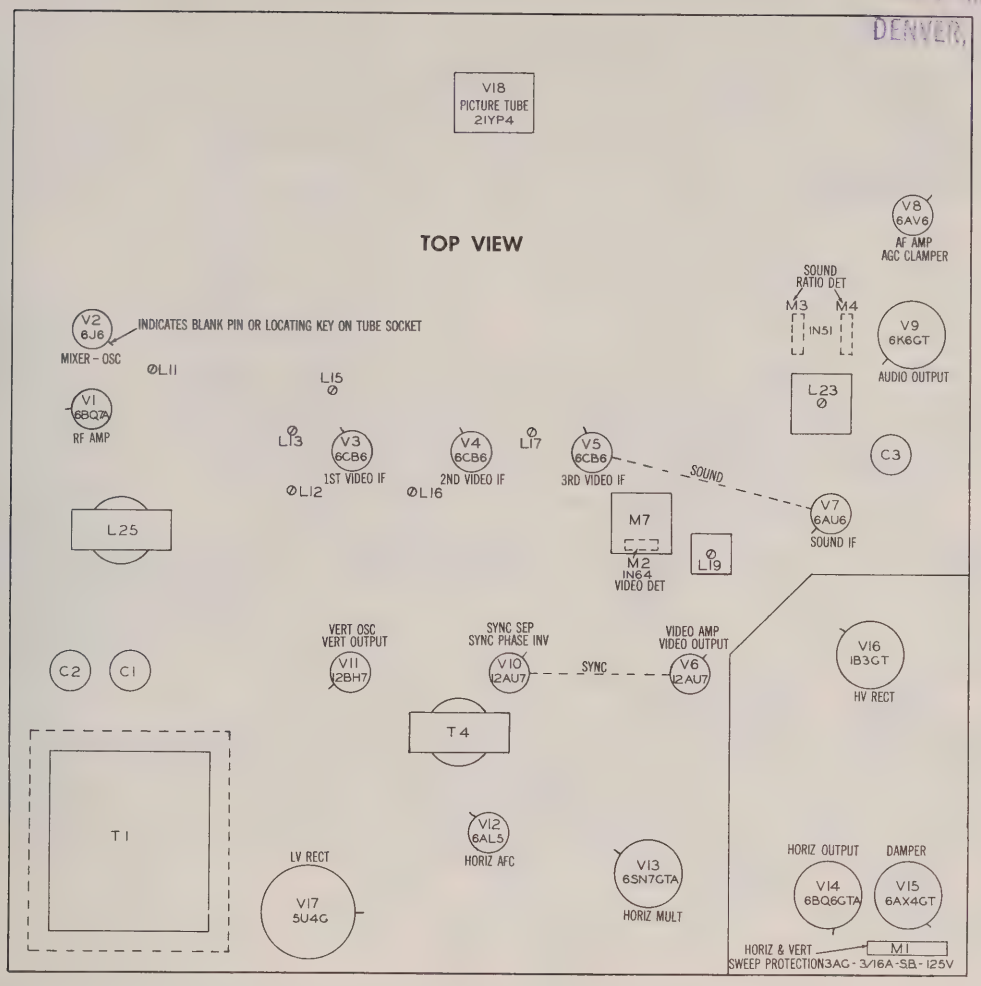


# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V17

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V7, V8, V9
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V10, V11
No horiz. sync - V10, V12, V13
No vert. or horiz. sync - V10

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V18, Fuse (M1)
No vertical deflection - V11
Poor vert. linearity or foldover - V11
Poor horiz. linearity or foldover - V13, V14, V15
Narrow picture - V13, V14, V15, V16, V17
Vert. off freq. - V10, V11
Horiz. off freq. - V10, V12, V13

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube (V13) to disable the high voltage.

**VIDEO IF ALIGNMENT**

On models 1941, 2 using VHF/UHF tuner 10535C the converter tube is a 6U8.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | Direct | High side to an ungrounded tube shield floating over converter tube low side to chassis. | 45.5MC (Unmod.) | Any non-interfering channel. | DC probe to point (A). Common to chassis. | A1, A2 | Adjust for maximum deflection. |
| 2 | " | " | 41.8MC | " | " | A3 | " |
| 3 | " | " | 43.3MC | " | " | A4 | " |
| 4 | " | " | 44.5MC | " | " | A5 | " |
| 5 | " | " | 39.75MC | " | " | A6, A7 | Adjust for minimum deflection. (A7 has been deleted in later production sets.) |
| 6 | " | " | 47.25MC | " | " | A8, A9 | Adjust for minimum deflection. Repeat steps 1 thru 6. |

**OVERALL VIDEO IF RESPONSE CHECK**

Connect the negative lead of a 5MFD, 50 volt cpaacitor to point (A). Connect the positive lead to chassis.
Couple a second signal generator to an ungrounded tube shield floating over converter tube (V2) to provide markers on the response curve.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 7. | Two 120Ω carbon resistors | Across antenna terminals with 120Ω in each lead | 63MC (10MC Swp.) | 39.75MC<br>41.25MC<br>43.3MC<br>45.0MC<br>45.75MC<br>45.25MC | 3 | Vert. amp. through 22KΩ to point (B). Low side to chassis. | | Check for response curve similar to fig. 1. The 39.75 and 47.25MC marker should be at MINIMUM response. To view these markers use high scope gain and increase sweep and signal generator output. The 45MC marker should not exceed 97% and the 41.25MC marker 12%. If necessary, slightly retouch A1 through A5 to obtain desired response. |

**4.5MC TRAP ALIGNMENT**

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 8 | .001MFD | High side to point (B). Low side to chassis. | 4.5MC (Unmod.) | Any non-interfering channel. | DC Probe thru detector (fig. 2) to pin 2 (grid) of picture tube. | A10 | Turn contrast control fully clockwise. Adjust for minimum deflection. |

**ALTERNATE 4.5MC TRAP ALIGNMENT**

Restore the set to normal operating condition and tune in a local TV station. Adjust A10 for minimum 4.5MC beat in the picture.

**SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM**

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 9 | .001MFD | High side to point (B). Low side to chassis. | 4.5MC | Any non-interfering channel. | DC probe to point (C). Common to chassis. | A11, A12 | Adjust for maximum deflection. |
| 10 | " | " | " | " | DC probe to point (D). Common to point (E). | A13 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

**SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE**

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 9 | .001MFD | High side to point (B). Low side to chassis. | 4.5MC (450KC Swp) | 4.5MC | Any non-interfering channel | Vert. Amp to point (C). Low side to chassis | A11, A12 | Disconnect stabilizing capacitor C3D. Adjust for curve of maximum amplitude and symmetry similar to fig. 3. |
| 10 | " | " | " | " | " | Vert. amp. to point (D). Low side to chassis. | A13 | Reconnect stabilizing capacitor C3D. Adjust so that 4.5MC occurs at center of crossover. lines as in fig. 4. Slightly retouch A12 for maximum amplitude and straightness of crossover lines. |

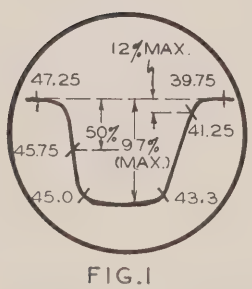

FIG. 1

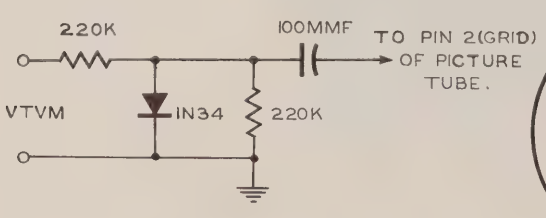

FIG. 2

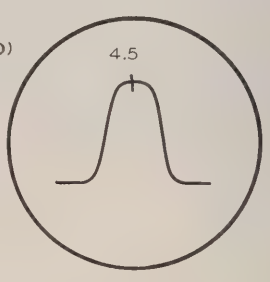

FIG. 3

# ALIGNMENT INSTRUCTIONS (cont)

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OSCILLATOR ALIGNMENT (VHF TUNER #10534B)

Restore tube shield on V2 to its proper position.
The channel oscillator adjustment screws are reached through a hole just to the right of the tuning shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 11 | Two 120Ω carbon resistors | Across antenna terminals with 120Ω in each lead. | 213MC (10MC Swp) | 211. 25MC 215. 75MC | 13 | Vert. amp. thru 22KΩ to point (B). Low side to chassis. | A14 | Adjust to place video marker at 50% on response curve as in fig. 5. Sound marker should not exceed 12%. |
| | | | 207MC (10MC Swp) | 205. 25MC 209. 75MC | 12 | | A15 | |
| | | | 201MC (10MC Swp) | 199. 25MC 203. 75MC | 11 | | A16 | |
| | | | 195MC (10MC Swp) | 193. 25MC 197. 75MC | 10 | | A17 | |
| | | | 189MC (10MCSwp) | 187. 25MC 191. 75MC | 9 | | A18 | |
| | | | 183MC (10MC Swp) | 181. 25MC 185. 75MC | 8 | | A19 | |
| | | | 177MC (10MC Swp) | 175. 25MC 179. 75MC | 7 | | A20 | |
| | | | 85MC (10MC Swp) | 83. 25MC 87. 75MC | 6 | | A21 | |
| | | | 79MC (10MC Swp) | 77. 25MC 81. 75MC | 5 | | A22 | |
| | | | 69MC (10MC Swp) | 67. 25MC 71. 75MC | 4 | | A23 | |
| | | | 63MC (10MC Swp) | 61. 25MC 65. 75MC | 3 | | A24 | |
| | | | 57MC (10MC Swp) | 55. 25MC 59. 75MC | 2 | | A25 | |

OSCILLATOR ALIGNMENT (VHF/UHF TUNER 10535C)

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of channels, it may be necessary to correct them in one step using A26. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any individual channel.
If adjustment of A26 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency .
Oscillator alignment of the 10535C tuner (adjustments A14 thru A25) is identical to that used for the VHF tuner 10534B. Follow the procedure outlined under step 11.
The oscillator adjustments screws (tuner 10535C) are reached through a hole just above and to the left of the tuner shaft.

RF AND MIXER ALIGNMENT (TUNERS 10534B & 10535C)

This portion of the receiver has been properly aligned at the factory and is very stable.
Alignment of this portion of the receiver is not recommended in the field.

UHF TUNER ALIGNMENT

Alignment of this portion of the receiver is not recommended in the field.

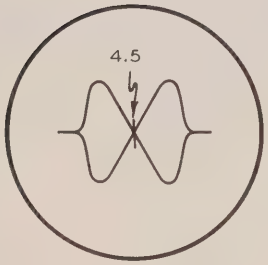



FIG.4

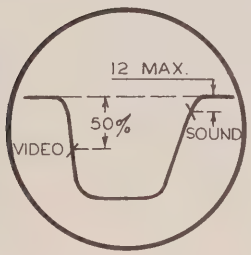
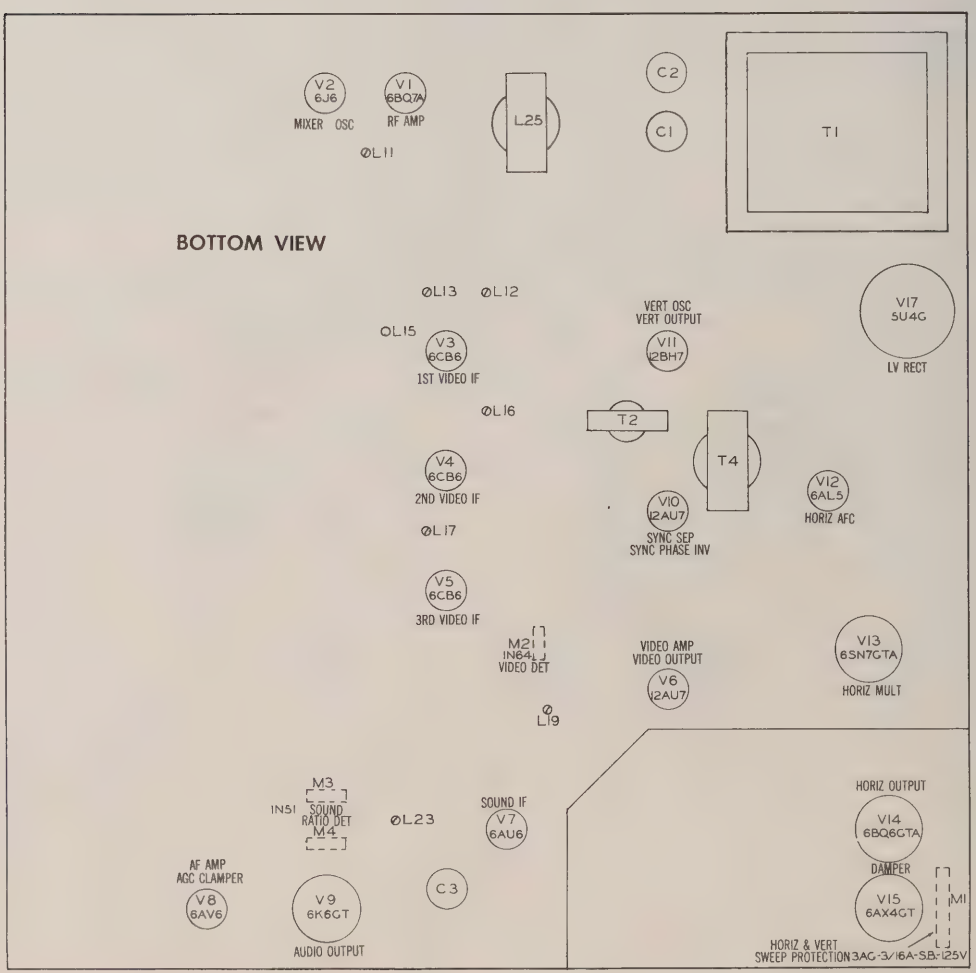



FIG.5

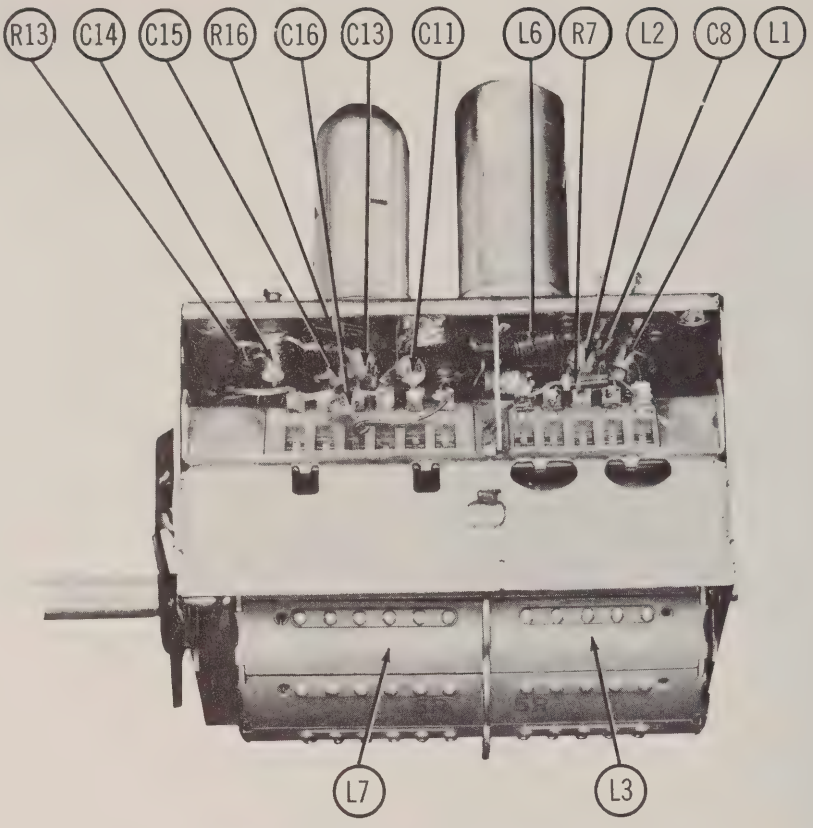
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BQ7A | Inf. | 6Meg | 0Ω | .1Ω | 0Ω | †500Ω | 180KΩ | Inf. | 0Ω |
| V 2 | 6J6 | †6.4KΩ | †17KΩ | .1Ω | 0Ω | 235KΩ | 10KΩ | 0Ω | | |
| V 3 | 6CB6 | 2.2Meg | 82Ω | 0Ω | .1Ω | †1.7KΩ | †1.7KΩ | 0Ω | | |
| V 4 | 6CB6 | 2.2Meg | 82Ω | 0Ω | .1Ω | †1.4KΩ | †1.4KΩ | 0Ω | | |
| V 5 | 6CB6 | 2.2Meg | 120Ω | 0Ω | .1Ω | †1.2KΩ | †1.2KΩ | 0Ω | | |
| V 6 | 12AU7 | †▲15KΩ | 1Meg | 100Ω | .1Ω | .1Ω | †3.3KΩ | 56KΩ | ▲700Ω | 0Ω |
| V 7 | 6AU6 | 2.5Ω | 0Ω | 0Ω | .1Ω | †6KΩ | †6KΩ | 150Ω | | |
| V 8 | 6AV6 | 4.7Meg | 0Ω | 0Ω | .1Ω | Inf. | 5Meg | †230KΩ | | |
| V 9 | 6K6GT | Inf. | 0Ω | †425Ω | †40Ω | 470KΩ | .5Ω | .1Ω | 560Ω | |
| V 10 | 12AU7 | †1.5Meg | 1.5Meg | 0Ω | .1Ω | .1Ω | †7.2KΩ | †1.5Meg | 3KΩ | 0Ω |
| V 11 | 12BH7 | ▲7.5KΩ | 3.3Meg | 1KΩ | .1Ω | .1Ω | ◓2.5Meg | 2.5Meg | 0Ω | 0Ω |
| V 12 | 6AL5 | 15Ω | 15Ω | 0Ω | .1Ω | 4.8Meg | 0Ω | 4.8Meg | | |
| V 13 | 6SN7GTA | 5.2Meg | †10KΩ | 2.2KΩ | 150KΩ | †150KΩ | 2.2KΩ | .1Ω | 0Ω | |
| V 14 | 6BQ6GT | Inf. | .1Ω | 56KΩ | †4.7KΩ | 750KΩ | 18KΩ | 0Ω | 0Ω | Top Cap ◓16Ω |
| V 15 | 6AX4GT | Inf. | Inf. | 250KΩ | †1.2KΩ | †45Ω | ◓68KΩ | .1Ω | 0Ω | |
| V 16 | 1B3GT | PINS 1-8 | HAVE | INFINITE | RESISTANCE | | | | | Top Cap ◓500Ω |
| V 17 | 5U4G | Inf. | 20KΩ | Inf. | 145Ω | Inf. | 140Ω | Inf. | 20KΩ | |
| V 18 | 21YP4 | 0Ω | 470KΩ | PIN 6 ◓900KΩ | PIN 10 ◓470KΩ | PIN 11 †220KΩ | PIN 12 .1Ω | | | |

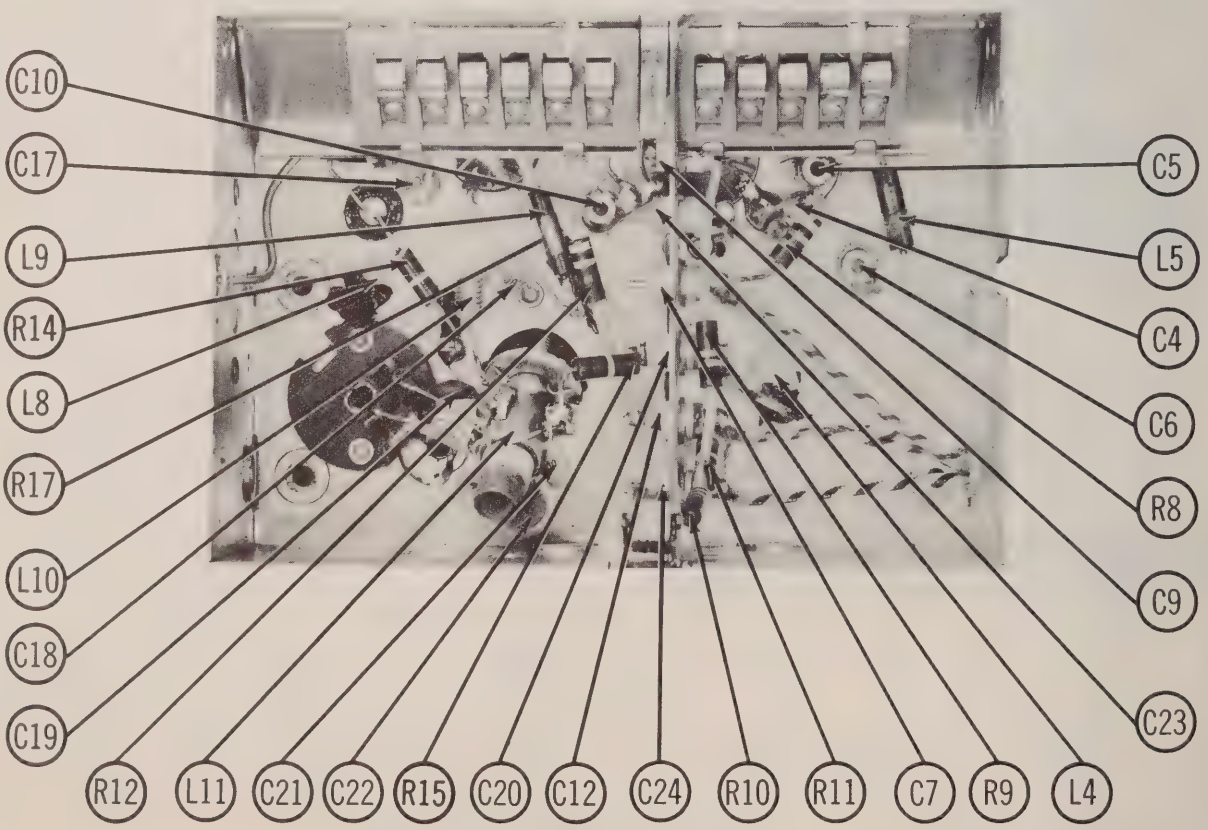
† MEASURED FROM 2 OF V17.
▲ MEASURED WITH "LOCAL-DISTANCE" SWITCH IN "LOCAL" POSITION.
◓ MEASURED FROM PIN 3 OF V15.




# TUBE PLACEMENT CHART




**RF TUNER-RIGHT SIDE**




**RF TUNER-BOTTOM VIEW**

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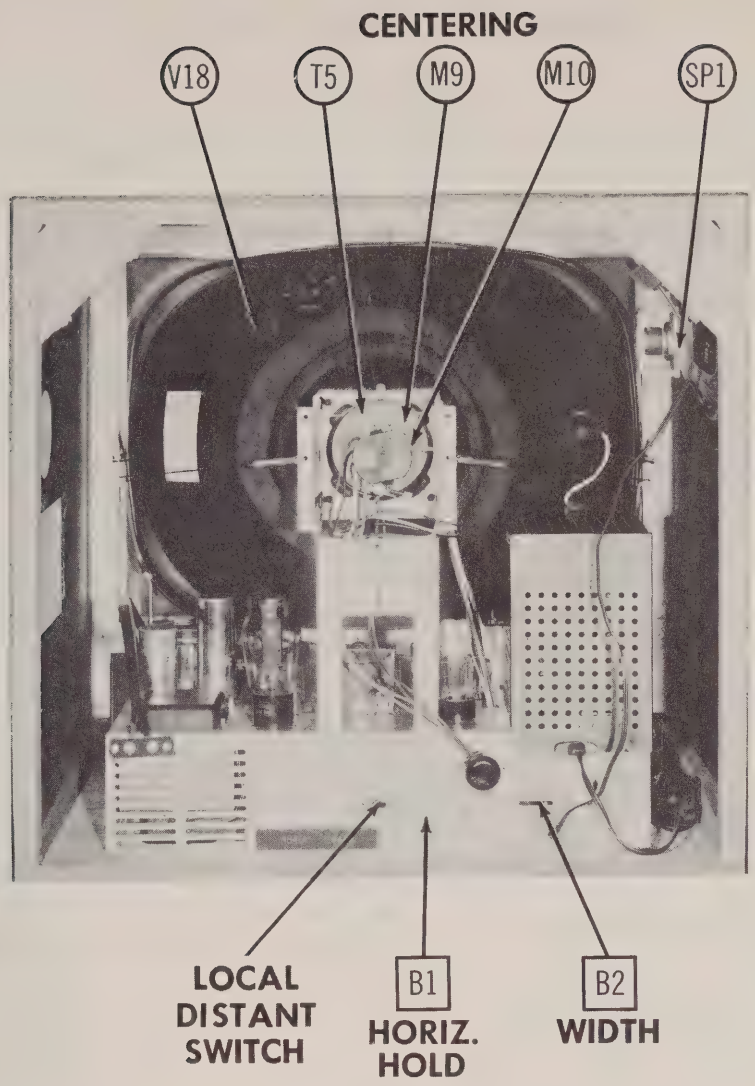



## CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Rotate the horizontal hold adjustment (B1) until the picture synchronizes horizontally.

Momentarily remove the signal by switching off channel and back again. If necessary, slightly retouch B1 for best lock-in action.

Adjust the horizontal width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

# TROUBLE SHOOTING AIDS

## SWEEP

### HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V14, V15 and V17. Check adjustment B2. Check C66, C67, R83, R80 and other associated components. Check T3 and T5A.

DRIVE LINES

Check by substitution V14 and V15. Check C67, C66, R80, R83 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V14 and V15. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V13, V14 and V15. Check C63 for open. Check L24, C64, R76 and other associated components.

XMAS TREE EFFECT

Check by substitution V13, V14 and V15. Check T3 and T5A for internal arcing. Check L24, C64, C65, R77, R79 and other associated components.

### VERTICAL

LOSS OF SWEEP

Check by substitution V11. Check waveform W8.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T4, T5B, C58, R67 and other associated components. | Check T2, C57, R64, R65, R4 and other associated components. |

INSUFFICIENT SWEEP

Substitute V11. Check height and vertical linearity controls for proper operation. If still unsatisfactory, check T4, T5B, C1B, R5 and other components associated with V11.

COMPRESSED AT BOTTOM

Substitute V11. Check R64, R65, R4, T2 and other associated components.

COMPRESSED AT TOP

Substitute V11. Check C1B, R5, T4, T5B and other associated components.

FOLDS

Substitute V11. Check C54, C1B, R68, R5 and other associated components.

## SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V10. Check C50, C51, R56, R57, R59, R58 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V11. Check waveform W6.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T2, C53, R62, R63, R6 and other associated components. | Check vertical integrator network for component failure or change of value. |

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check horizontal AFC network. Check L24, C64, C63, R77 and other associated components.

HORIZONTAL BENDING

Check by substitution V10, V12 and V13. Check horizontal AFC network.

## VIDEO

LOSS OF VIDEO

Substitute V6. Check C39, C41, R37, R35, R33, L20, L22 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A10. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check contrast control, picture tube, C37, C41, R32 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check video crystal detector network. Check picture tube, C41, C42 and other associated components.

SMEAR

Substitute V6. Check L20, L21, R32, C38 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

## AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stages V8 and V9 using audio signal generator. Apply audio signal across R1B.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check audio IF stage for component failure or change of value. | Check C46, C47, C48, C49, R50, T7, speaker and other associated components. |

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A13. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound

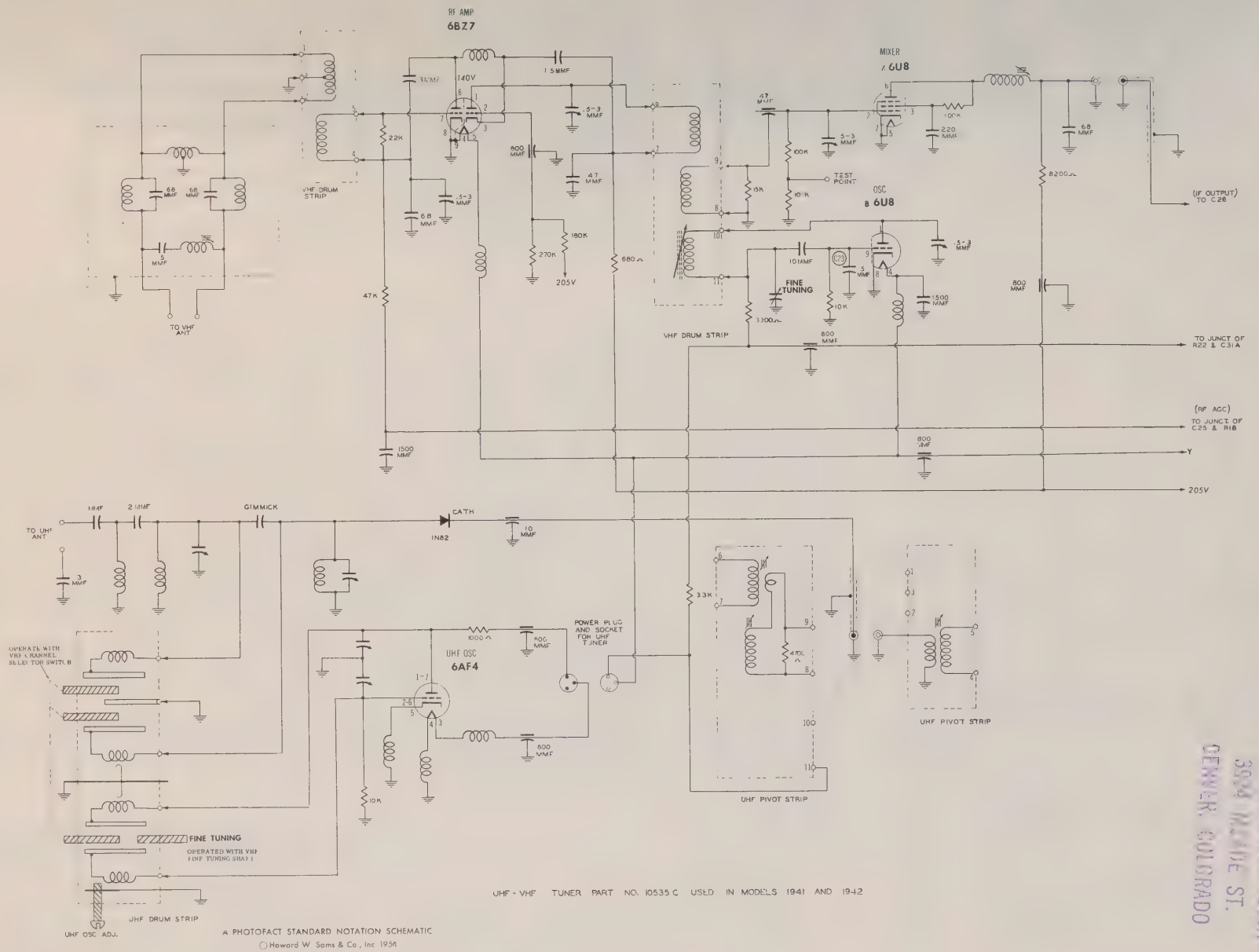
## POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V17. Check B+ filter and decoupling network for component failure or change of value.

SMALL AND/OR DIM PICTURE

Substitute V17. Check B+ filter and decoupling network.




# UHF-VHF ALTERNATE TUNER SCHEMATIC

## MODELS 1841, 1842, 1941, 1942 (Ch. 1840)

PACKARD-BELL

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DENVER, COLORADO

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DENVER, COLORADO

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: PACKARD-BELL PART No. | STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amp. | 6BQ7A | 6BQ7A | 9AP | 6BZ7 used in some versions. |
| V2 | Mixer-Osc. | 6J8 | 6J8 | 7BF | |
| V3 | 1st Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V4 | 2nd Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V5 | 3rd Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V6 | Video Amp.- Video Output | 12AU7 | 12AU7 | 9A | |
| V7 | Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V8 | AF Amp.-AGC Clamper | 6AV6 | 6AV6 | 7BT | |
| V9 | Audio Output | 6K6GT | 6K6GT | 7S | |
| V10 | Sync Sep.-Sync Phase Inverter | 12AU7 | 12AU7 | 9A | |
| V11 | Vert Osc.- Vert Output | 12BH7 | 12BH7 | 9HF | |
| V12 | Horiz. AFC | 6AL5 | 6AL5 | 6BT | |
| V13 | Horiz. Mult. | 6SN7GTA | 6SN7GTA | 8AD | |
| V14 | Horiz. Output | 6S4/6GT | 6S4/6GT | 6AM | |
| V15 | Damper | 6AX4GT | 6AX4GT | 4CG | |
| V16 | HV Rect. | 1B3GT | 1B3GT | 5C | |
| V17 | LV Rect. | 5U4G | 5U4G | 5T | |

## CATHODE-RAY TUBE

| ITEM No. | REPLACEMENT DATA: Packard-Bell PART No. | CBS-HYTRON PART No. | GENERAL ELECTRIC PART No. | SYLVANIA PART No. | WESTINGHOUSE PART No. | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|---|---|
| V18 | 21YP4 | 21YP4 | 21YP4<br>21YP4A | 21YP4<br>21YP4A<br>21AFP4 ① | 21YP4 | 12L<br>12L | ① Circuit changes necessary |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | VOLT | REPLACEMENT DATA: Packard-Bell PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ●100 | 350 | 24078 | AFH3-182 | | C141 | | ‡ FP235 | TVL-3722 | |
| B | ●100 | 50 | | | | | | ‡ TC3501 | | |
| C2A | ●100 | 350 | 24075 | AFH4-05 | | D004 | | FP230.6 | TVL-3672 | |
| B | ●10 | 350 | | | | | | | | |
| C3A | ●10 | 450 | 24074A | AFH4-110 | | D075 | | FP424.1 | TVL-4706 | |
| B | ●100 | 350 | | | | | | | | |
| C | 25 | 25 | | | | | | | | |
| D | ●5 | 50 | | | | | | | | |
| C4 | 3 | | | SI3NP0 | TCZ-3<br>829-10 | Z007 | NP0K-030 | ZT-5535 | 5TCCB-V33 | |
| C5 | 3-8 | | | | 829-10 | | | | | |
| C6 | 2-8 | | | | 829-10 | | | | | |
| C7 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C8 | 3 | | | SI3NP0 | TCZ-3 | Z007 | NP0K-030 | ZT-5535 | 5TCCB-V33 | |
| C9 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C10 | .5-3 | | | | 829-3 | | 315-01-0R5 | CT565A | | |
| C11 | 220 | | | SI220 | DS-121 | G044 | GPK-121 | UC-5312 | 5GA-T12 | |
| C12 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C13 | 51 | | | SI51 | DS-510 | G035 | GPK-510 | | 5GA-Q51 | |
| C14 | .5-3 | | | | 829-3 | | 315-01-0R5 | CT565A | | |
| C15 | 10 | | | SI10NP0 | TCZ-10 | Z016 | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C16 | 5 | | | | | | | | | |
| C17 | 1500 | | | BPD-0015 | DD-152 | K072 | 801-0015 | DC-5215 | 5HK-D15 | |
| C18 | 1500 | | | BPD-0015 | DD-152 | K072 | 801-0015 | DC-5215 | 5HK-D15 | |
| C19 | 6-8 | | | SI6.8NP0 | TCZ-6.8 | Z013 | NP0K-6R8 | ZT-5588 | 5TCC-V68 | |
| C20 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C21 | 1500 | | | BPD-0015 | DD-152 | K072 | 801-0015 | DC-5215 | 5HK-D15 | |
| C22 | 10 | | | | | | | | | |
| C23 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C24 | 1000 | | | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C25 | .1 | 200 | 23010 | P286-1 | DF-104 | CUB32P1 | | PT401 | 2TM-P1 | |
| C26 | 470 | | 23916 | SI470 | DS-471 | G045 | GPK-471 | UC-5347 | 5GA-T47 | Note 1 |
| C27 | 2.2 | | 23969 | SI.2NP0 | TCZ-2.2 | Z006 | NP0K-2R2 | | 5TCCB-V22 | |
| C28 | 22 | 500 | | 1469-220 | | 22R5Q22 | | MCB220 | 5TCC-Q22 | |
| C29 | 2.2 | | 23969 | SI2.2NP0 | TCZ-2.2 | Z006<br>22R5Q22 | NP0K-2R2 | | 5TCCB-V22 | |
| C30 | 30 | 500 | | 1469-300 | | 22R3Q3 | | | | |
| C31A | 10000 | } | 23962 | BPD-2X01 | DD8-103 | DK082 | 81L-01 | DC-511 | 5HK-3Z1 | |
| B | 10000 | } | | | | | 81L-01 | DC-511 | | |
| C32 | 22 | | | SI22NP0 | TCZ-20 | T214 | NP0K-220 | ZT-542 | 5TCC-Q22 | |
| C33 | 10000 | } | 23939 | BPD-01 | DD-104 | K082 | 81L-01 | DC-511 | 5HK-31 | |
| C34A | 10000 | } | 23962 | BPD-2X01 | DD8-103 | DK082 | 81L-01 | DC-511 | 5HK-3Z1 | |
| B | 10000 | } | | | | | 81L-01 | DC-511 | | |
| C35 | 1000 | | 23985 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C36 | .05 | 200 | 23017 | P286-05 | DF-503 | CUB3Z5 | | PT415 | 2TM-S5 | |
| C37 | .05 | 600 | 23010 | P686-05 | DF-503 | CUB6S5 | | PT615 | 6TM-S5 | |
| C38 | 2000 | | 23974 | BPD-002 | DD-302 | K072 | 801-002 | DC-522 | 5HK-D2 | |
| C39 | .25 | 600 | 23014 | 684-25 | | CUB6P2S | | PT602S | 6TM-P2S | |
| C40 | .68 | | 23913 | SI68NT50 | TCN-68 | N038 | N750L-680 | NT-5468 | 5TCU-Q68 | |
| C41 | .1 | 600 | 23012 | P686-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C42 | .1 | 600 | 23012 | P686-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C43A | 10000 | } | 23962 | BPD-2X01 | DD8-103 | DK082 | 81L-01 | DC-511 | 5HK-3Z1 | |
| B | 10000 | } | | | | | 81L-01 | DC-511 | | |
| C44 | 5000 | | 23931 | BPD-005 | DD-502 | K080 | 81L-005 | DC-5205 | 5HK-D5 | |
| C45 | .003 | 600 | 23016 | P688-003 | DE-302 | CUB6D3 | GP2-333-302 | PT623 | 6TM-D3 | |
| C46 | .02 | 600 | 23007 | P688-02 | DF-203 | CUB6S2 | 817-02 | PT612 | 6TM-S2 | |
| C47 | .02 | 600 | 23007 | P688-02 | DF-203 | CUB6S2 | 817-02 | PT612 | 6TM-S2 | |
| C48 | .01 | 600 | 23007 | P688-02 | DE-203 | CUB6S2 | 817-02 | PT612 | 6TM-S2 | |
| C49 | .005 | 600 | 23004 | P688-005 | DE-502 | CUB6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C50 | 20000 | | 23972 | BPD-05 | DF-203 | K085 | | | | |
| C51 | 220 | | 23915 | SI220 | DE-221 | TP39 | GP3K-221 | UC-5332 | 5GA-T22 | |
| C52A | .002 | | | | | | | PT623 | | |
| B | .005 | | ●23951 | ●PA-110 | ●PC-100 | ●165TM1 | ●1405-01 | PT625 | ●V-1 | |
| C | .005 | | | | | | | PT625 | | |
| C53 | 4900 | 500 | 23207 | 1464-502 | | IR5D5 | | MC9465 | MS-25 | |
| C54 | .022 | 600 | 23042 | P688-022 | | CUB6S22 | | PT6122 | 6TM-S22 | |
| C55 | .022 | 600 | 23042 | P688-022 | | CUB6S22 | | PT6123 | 6TM-S22 | |
| C56 | .05 | 600 | 23010 | P688-05 | DF-503 | CUB6S5 | | PT615 | 6TM-S5 | |
| C57 | .1 | 600 | 23012 | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C58 | .02 | 600 | 23007 | P688-02 | DF-203 | CUB6S2 | 817-02 | PT612 | 6TM-S2 | |

## CAPACITORS (cont)

| ITEM No. | RATING: CAP. | VOLT | REPLACEMENT DATA: Packard-Bell PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C59 | 1500 | | 23936 | BPD-0015 | DD-152 | K072 | 801-0015 | DC-5215 | 5HK-D15 | |
| C60 | 1500 | | 23936 | BPD-0015 | DD-152 | K072 | 801-0015 | DC-5215 | 5HK-D15 | |
| C61 | .1 | 600 | 23012 | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C62 | 5000 | | 23980 | 1PA-199 | DD-502 | K080 | 81L-005 | DC-5205 | 5HK-D5 | |
| C63 | .1 | 200 | 23019 | P388-1 | DF-104 | CUB3P1 | | PT401 | 2TM-P1 | |
| C64 | 4000 | 500 | 23206 | 1464-402 | | IR5D4 | | MC9463 | MS-24 | |
| C65 | 330 | 500 | 23221 | 1469-331 | | SR5T33 | | | | |
| C66 | 1500 | | 23938 | SI1500 | DS-152 | TP54 | GP2L-152 | UC-5316 | 5HK-DL | Note 2 |
| C67 | 330 | | 23944 | SI330 | DS-331 | G056 | GPSK-331 | UC-5333 | 5GA-T33 | |
| C68 | .1 | 600 | 23012 | P688-1 | DF-104 | CUB6P1 | | PT601 | 6TM-P1 | |
| C69 | .01 | 600 | 23008 | P688-01 | DE-103 | CUB6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C70 | .05 | 600 | 23010 | P688-05 | | CUB6S5 | | PT615 | 6TM-S5 | |
| C71 | 500 | 20000 | 23959 | HV20C | TV3-502 | MMU20T5 | 413 | HV20035A | 20DK-T5 | |
| C72 | 56 | 3500 | 23977 | | DD60-560 | | | | 75GA-Q56 | |
| C73 | 47 | 1500 | | HVD15-000047 | DD30-470 | MC947 | IR5KV-470 | | 30GA-Q47 | Note 3 |
| C74 | .01 | 125VAC | 23932 | | | | | | | |
| C75 | .01 | 125VAC | 23932 | | | | | | | |

Note 1. Used only with 10635 tuner.
Note 2. Some versions use .01MFD in this application (part #23006).
Note 3. Some versions use 120MMF in this application (Replace with unit same as original).
● Items C52A, C52B, C52C, R61A, R61B, R61C are combined in one unit.
† Items C62 and R74 are combined in one unit.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | WATTS | REPLACEMENT DATA: Packard-Bell PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 5000Ω | ½ | 25835A | *QJ-36 | RTV-213 | SBB-627-5 | UF53R | Contrast Panel |
| B | 500KΩ | ½ | | | | | UR45A | Volume Rear |
| C | Switch | | | | | | U8-26 | Attach to R1B |
| R2A | 3Meg | ½ | 25854 | Q11-140 | A47-2.5Meg-B | AB-B4 | U59 | Focus |
| B | Shaft | | Not Req. | Not Req. | KSB-3 | AK-4 | Not Req. | Attach to R2A |
| R3A | 50KΩ | ½ | 25856 | *Q11-123 | A47-50K-S | AB-S1 | U35 | Brightness |
| B | Shaft | | Not Req. | Not Req. | KSB-3 | AK-4 | Not Req. | Attach to R3A |
| R4A | 3Meg | ½ | 25854 | Q11-140 | A47-2.5Meg-S | AB-B4 | U59 | Height |
| B | Shaft | | Not Req. | Not Req. | KSB-3 | AK-4 | Not Req. | Attach to R4A |
| R5A | 5000Ω | ½ | 25855 | Q11-114 | A47-5000-S | AB-10 | U54 | Vert. Lin. |
| B | Shaft | | Not Req. | Not Req. | KSB-3 | AK-4 | Not Req. | Attach to R5A |
| R6A | 3Meg | ½ | 25854 | Q11-140 | A47-2.5Meg-S | AB-B4 | U59 | Vert. Hold |
| B | Shaft | | Not Req. | Not Req. | KSB-3 | AK-4 | Not Req. | Attach to R6A |

* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS AND SHAFTS: R1T-1/4 & P1-1S (PANEL)
R1S-13S & R2-20A (REAR)
76-1 SWITCH

† Universal Replacement (Mallory exact duplicate Part No. UE-525-S)

## RESISTORS

| ITEM No. | RATING: OHMS | WATT | REPLACEMENT DATA: Packard-Bell PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7 | 15KΩ | ½ | | BTS-15K | |
| R8 | 47KΩ | ½ | | BTS-47K | |
| R9 | 100KΩ | ½ | | BTS-100K | |
| R10 | 330KΩ | ½ | | BTS-330K | |
| R11 | 180KΩ | ½ | | BTS-180K | |
| R12 | 470Ω | ½ | | BTS-470 | |
| R13 | 15KΩ | ½ | | BTS-15K | |
| R14 | 220KΩ | ½ | | BTS-220K | |
| R15 | 15KΩ | ½ | | BTS-15K | |
| R16 | 10KΩ | ½ | | BTS-10K | |
| R17 | 4700Ω | ½ | | BTS-4700 | |
| R18 | 1Meg | ½ | 73161 | BTS-1Meg | |
| R19 | 2.5Meg | ½ | 73165 | BTS-2.5Meg | |
| R20 | 10KΩ | ½ | 73037 | BTS-10K | |
| R21 | 82Ω | ½ | 73013 | BTS-82 | |
| R22 | 220Ω | ½ | 73017 | BTS-220 | |
| R23 | 12KΩ | ½ | 73038 | BTS-12K | |
| R24 | 82Ω | ½ | 73012 | BTS-82 | |
| R25 | 220Ω | ½ | 73017 | BTS-220 | |
| R26 | 100Ω | ½ | 73025 | BTS-100 | |
| R27 | 3000Ω | ½ | 73031 | BTS-3000 | Note 1 |
| R28 | 120Ω | ½ | 73014 | BTS-120 | |
| R29 | 2.5Meg | ½ | 73165 | BTS-2.5Meg | |
| R30 | 3000Ω | ½ | | BTS-3000 | Note 1 |
| R31 | 1Meg | ½ | 73161 | BTS-1Meg | |
| R32 | 100Ω | 1 | 73013 | BTS-100 | |
| R33 | 4700Ω | 1 | 73233 | BTA-4700 | |
| R34 | 47KΩ | 1 | 73245 | BTA-47K | |
| R35 | 10KΩ | 2 | 73437 | BTS-10K | |
| R36 | 330Ω | 1 | 73019 | BTS-330 | |
| R37 | 2300Ω | 2 | 73431 | BTB-2300 | |
| R38 | 1200Ω | 12 | 73634 | BTS-470K | |
| R39 | 470KΩ | ½ | 73167 | BTS-470K | |
| R40 | 220KΩ | ½ | 73153 | BTS-220K | |
| R41 | 1500Ω | ½ | 73037 | BTS-1500 | |
| R42 | 470KΩ | ½ | 73157 | BTS-470K | |
| R43 | 150Ω | ½ | | BTS-150 | |
| R44 | 4700Ω | 1 | 73233 | BTA-4700 | |
| R45 | 470Ω | 1 | 73231 | BTS-470 | |
| R46 | 10KΩ | ½ | 73037 | BTS-10K | |
| R47 | 10KΩ | ½ | 73037 | BTS-10K | |
| R48 | 22KΩ | ½ | 73041 | BTS-22K | |
| R49 | 4.7Meg | ½ | 73169 | BTS-4.7Meg | |
| R50 | 220KΩ | ½ | 73153 | BTS-220K | |

| ITEM No. | RATING: OHMS | WATT | REPLACEMENT DATA: Packard-Bell PART No. | IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R51 | 470KΩ | ½ | 73157 | BTS-470K | |
| R52 | 56KΩ | ½ | 73462 | BTS-560 | |
| R53 | 1.5Meg | ½ | 73163 | BTS-1.5Meg | |
| R54 | 470KΩ | ½ | 73157 | BTS-470K | |
| R55 | 22KΩ | ½ | 73041 | BTS-22K | |
| R56 | 1.5Meg | ½ | 73163 | BTS-1.5Meg | |
| R57 | 3000Ω | ½ | | BTS-3000 | Note 1 |
| R58 | 3000Ω | ½ | | BTS-3000 | Note 1 |
| R59 | 3000Ω | ½ | | BTS-3000 | Note 1 |
| R60 | 56KΩ | ½ | 73048 | BTS-56K | |
| R61A | 22KΩ | } | | BTS-22K | |
| B | 82000 | } | ‡23951 | BTS-8200 | |
| C | 82000 | } | | BTS-8200 | |
| R62 | 1Meg | ½ | 73161 | BTS-1Meg | |
| R63 | 100KΩ | ½ | 73149 | BTS-100K | |
| R64 | 1.5Meg | ½ | 73163 | BTS-1.5Meg | |
| R65 | 220KΩ | ½ | 73153 | BTS-220K | |
| R66 | 3.3Meg | ½ | 73167 | BTS-3.3Meg | |
| R67 | 150KΩ | ½ | 73251 | BTS-150K | |
| R68 | 15KΩ | ½ | 73039 | BTS-15K | |
| R69 | 56KΩ | ½ | 73022 | BTS-560 | |
| R70 | 56KΩ | ½ | 73022 | BTS-560 | |
| R71 | 100KΩ | ½ | 73049 | BTS-100K | |
| R72 | 100KΩ | ½ | 73049 | BTS-100K | |
| R73 | 4.7Meg | ½ | 73169 | BTS-4.7Meg | |
| R74 | 470KΩ | ½ | †23960 | BTS-470K | |
| R75 | 15Ω | ½ | 73003 | BTS-15 | |
| R76 | 2200Ω | ½ | 73039 | BTS-2200 | |
| R77 | 10KΩ | ½ | 73037 | BTS-10K | |
| R78 | 150KΩ | ½ | 73251 | BTS-150K | |
| R79 | 150KΩ | ½ | 73251 | BTS-150K | |
| R80 | 18KΩ | ½ | 73039 | BTS-18K | Note 2 |
| R81 | 680KΩ | ½ | 73159 | BTS-680K | |
| R82 | 56KΩ | ½ | 73046 | BTS-56K | |
| R83 | 4700Ω | 2 | 73433 | BTB-4700 | Note 3 |
| R84 | 6800Ω | 5 | 73853 | | |
| R85 | 3.3Ω | 1 | 73231 | | |
| R86 | 1Meg | ½ | 73398 | BTA-1Meg | |
| R87 | 1Meg | ½ | 73398 | BTA-1Meg | |
| R88 | 125Ω | 20 | 73689 | | |
| R89 | 100KΩ | ½ | 73149 | BTS-100K | |
| R90 | 270KΩ | ½ | 73054 | BTS-270K | |
| R91 | 100KΩ | ½ | | BTS-100K | Note 4 |

● Items R61A, R61B, R61C, C52A, C52B, C52C are combined in one unit.
† Items R74 and C62 are combined in one unit.
Note 1: Some versions may use a 3300Ω in this application.
Note 2: Some versions may use a 15KΩ in this application.
Note 3: Some versions may use a 10KΩ in this application.
Note 4: Not used in all versions.

## TRANSFORMER (POWER)

| ITEM No. | RATING: PRI | SEC. 1 | SEC. 2 | SEC. 3 | SEC. 4 | SEC. 5 | REPLACEMENT DATA: PACKARD BELL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | RCA TYPE No. | Halldorson PART No. | Thordarson PART No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | 117VAC ± 15A | 540VCT .230ADC | 5VAC @ 3A | 6.3VAC @ 8A | | | 89045 | P-8332 ② | P3078 ②③ | R-61BC ② | | P9736① | 26R33 ①③ |

① Drill new mounting holes.
② Parallel and phase 5.3V windings for sec. #3.
③ Use high voltage tape on sec. #1.

## TRANSFORMERS (SWEEP CIRCUITS)

| ITEM No. | USE | REPLACEMENT DATA: Packard-Bell PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | RCA TYPE No. | Halldorson PART No. | Thordarson PART No. |
|---|---|---|---|---|---|---|---|---|
| T2 | Vert. Osc. Trans. | 89046 | A-8135 | A-3003 | A-97X | 309T1 ① | B6702 | 24A87 ↓ |
| T3 | Horiz. Output Trans. | 89460 | A-8137 * | HVD-8 * | D-32 * | 330T1 * | F3411 * | F1Y-14 * |
| T4 | Vert. Output Trans. | 89461 | A-8140 ① | A-3081 ① | A-110X | | 21805 ①④ | 26857 ① |
| T5A | Yoke-Horiz.(18.5MH) | 29956 | | | | | | |
| B | Vert. (3.5MH) | | | | | | | |
| T6 | Width Coil (4-18MH) | 28555B | WC-5 ⑤ ⑥ | MWC-1⑤ ⑧ | WC-12⑤ ⑧ | 312R1 ⑤ ⑧ | RF800⑤ ⑦ | WC-18⑤ |

① Drill one new mounting hole.
② Drill new mounting holes.
⑤ Connect as auto transformer.
⑥ Use 50 to 1 turns ratio.
⑦ Connect to coded red and blue terminals.
⑧ Drill new mounting hole or use original slider and core.

## *HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

| ORIGINAL TERMINAL CONNECTIONS | Stancor Replacement Connections | Merit Replacement Connections | Triad Replacement Connections | RCA Replacement Connections | Halldorson Replacement Connections | Thordarson Replacement Connections |
|---|---|---|---|---|---|---|
| 7 | 7 | 9 | 9 | 9 | 9 | 9 |
| 4 | 4 | 6 | 7 & 8 | 8 | 8 | 7 & 8 |
| T | T | 7 | 5 | 7 | 7 | 5 |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Connect Width Coil Across → | 3 & 1 | 3 & 1 | 3 & 1 | 3 & 1 | 3 & 1 | 3 & 1 |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE: PRI | SEC | REPLACEMENT DATA: PACKARD-BELL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T7 | 6.8KΩ | 3.2Ω | 89427A | A-3877 | A-2950 | S-3X | 21000 | 24S51 | |

## SPEAKER

| ITEM No. | RATINGS: SIZE | FIELD | V. C. IMP. | REPLACEMENT DATA: Packard-Bell PART No. | JENSEN PART No. | QUAM PART No. | NOTES |
|---|---|---|---|---|---|---|---|
| SP1 | 6" | PM | 3.2Ω | 83305 | 6T-108<br>Mod. P6-X | 6A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES.: PRI. | SEC. | REPLACEMENT DATA: Packard-Bell PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1 | IF Trap | 0Ω | | | | | | Wound on 68 MMF cap. |
| L2 | IF Trap | 0Ω | | | | | | Wound on 68 MMF cap. |
| L3 | Ant. Coil | 0GCT | 0Ω | | | | | |
| L4 | Fil. Choke | 0Ω | | | | | | |
| L5 | IF Trap | .8Ω | | | | | | |
| L6 | Resd. Coil | 0Ω | | | | | | |
| L7 | RF, Mixer Grid, , Osc. Coils | 0Ω | | | | | | |
| L8 | Fil. Choke | 0Ω | | | | | | |
| L9 | Feedback Coil | 1.2Ω | | | | | | |
| L10 | RF Coil | 0Ω | | | | | | |
| L11 | Conv. Plate | 0Ω | | | | | | |
| L12 | 47.25 MC trap | 0Ω | | 29584 | 20-1047* | | 6219* | |
| L13 | 39.75MC trap | 0Ω | | 29585 | 20-1056 | | | |
| L14 | 1st Video IF | 0Ω | | 29559 | 20-1045* | | 6219* | |
| L15 | 2nd Video IF | .1Ω | .1Ω | 29560 | | | | Includes 47.25MC trap. |
| L16 | 3rd Video IF | .1Ω | .1Ω | 29574 | | | | Includes 39.75MC trap. |
| L17 | Shunt Peaking Coil | 8.5Ω | | 29908 | 19-4180 | TV-183 | 6179 | 180 Microhenries; Wound on 39KΩ Resistor |
| L18 | Series Peaking Coil | 1.4Ω | | 29566 | 18-1005 | | 4613 | 10 Microhenries |
| L19 | Sound IF | 1.6Ω | 2.5Ω | 29563 | 17-1021 | TV-108* | 1468* | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (cont)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | Packard-Bell PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L20 | Shunt Peaking Coil | 20Ω | | 29558 | 19-3500 | TV-188 | 4648 | 400 Microhenries |
| L21 | Series Peaking Coil | 7.5Ω | | 29506 | 19-3125▲ | TV-182 | 6178 | 120 Microhenries; Wound on 22KΩ Resistor. |
| L22 | Shunt Peaking Coil | 11.5Ω | | 29557 | 19-3250 | TV-185 | 6181 | 270 Microhenries |
| L23 | Ratio Det. | 4Ω | .2ΩCT | 29054 | 17-3493 | TV-115♦ | 6205♦ | Tertiary Winding=.7Ω |
| L24 | Horiz. Osc. | 100Ω | | 29527 | 19-1576 | TV-163 | 6210 | |

* Use one winding only.
■ Drill one new mounting hole.
▲ Parallel with 22K resistor.
♦ Use adaptor plate.

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL DIRECT CURRENT | D. C. RESISTANCE | INDUCTANCE (0 CURRENT 1000 ∿) | PACKARD-BELL PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| L25 | .230A | 41Ω | 1.6HY | 27005 | C2326 ① | C2996 | C-17X ① | C5037 ① | 26C44 ① |

① Drill one new mounting hole.

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PACKARD-BELL PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG S/B | 3/16A 125V | 45006 | | 313.187 (3/16A-3AG-S/B) | 357001 | MDL 3/16 | 4405 |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|
| | | Packard-Bell PART No. | SYLVANIA PART No. | FEDERAL PART No. | |
| M2 | 1N64 | | 1N60 or 1N132 | 1N60 or 1N64A | Video Detector |
| M3 | 1N51 | | 1N34 or 1N34A | | Sound Ratio Detector |
| M4 | 1N51 | | 1N34 or 1N34A | | Sound Ratio Detector |

## MISCELLANEOUS

| ITEM No. | PART NAME | Packard-Bell PART No. | NOTES |
|---|---|---|---|
| M5 | Dial Light | 54002 | #47, Bayonet |
| M6 | Tuner | 10534B | VHF-Models 1841, 1842 |
| | Tuner | 10535C | VHF-UHF - Models 1941, 1942 |
| M7 | Video Det. Assy. | 29573A | Includes coils, capacitors and M2. |
| M8 | Switch | 86709 | Local-Distance |
| M9 | Centering Magnet | 28075 | |
| M10 | Ion Trap | 28106A | |
| | Cabinet | | Order by Model number and specify finish |
| | Knob | 52085-CX (G) | Fine tuning - Maple-blond - Models with VHF tuner |
| | Knob | 52085-AB (G) | Fine tuning - Mahogany - Models with VHF tuner |
| | Knob | 52086-AN (D) | Volume - Maple-Blond - Models with VHF tuner |
| | Knob | 52086-AB (D) | Volume -Mahogany - Models with VHF tuner |
| | Knob | 52089-AN (D) | Channel Selector - Maple-blonde - Models with VHF tuner |
| | Knob | 52889-AB (D) | Channel Selector - Mahogany - Models with VHF tuner |
| | Knob | 52087-CX | Contrast - Maple-blonde - Models with VHF tuner |
| | Knob | 52087-AB | Contrast - Mahogany - Models with VHF tuner |
| | Knob | 52108B | UHF tuning - For Models with VHF-UHF tuner |
| | Knob | 52106 | VHF tuning - For Models with VHF-UHF tuner |
| | Knob | 52097 | Fine tuning - For Models with VHF-UHF tuner |
| | Knob | 52098 | Volume - For Models with VHF-UHF tuner |
| | Knob | 52087-CX | Contrast - Maple-blond - For Models with VHF-UHF tuner |
| | Knob | 52087-AB | Contrast - Mahogany - For Models with VHF-UHF tuner |

# TROUBLE SHOOTING AIDS (cont)

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DENVER, COLORADO

## HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V13, V14, V15 and V16. Check M1 fuse. Check waveform W15.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T3, T5A, C69, C70, C68, R84, R83 and other associated components. | Check L24, C64, C65, C66, R79, R77, R76 and other associated components. |

INSUFFICIENT HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check C71, C67, C66, R83, R80, R85 and other associated components.

BLOOMING

Check by substitution V14, V15, V16 and V17. Check R87, R86, R83, C66 and other associated components.

## GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video ".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

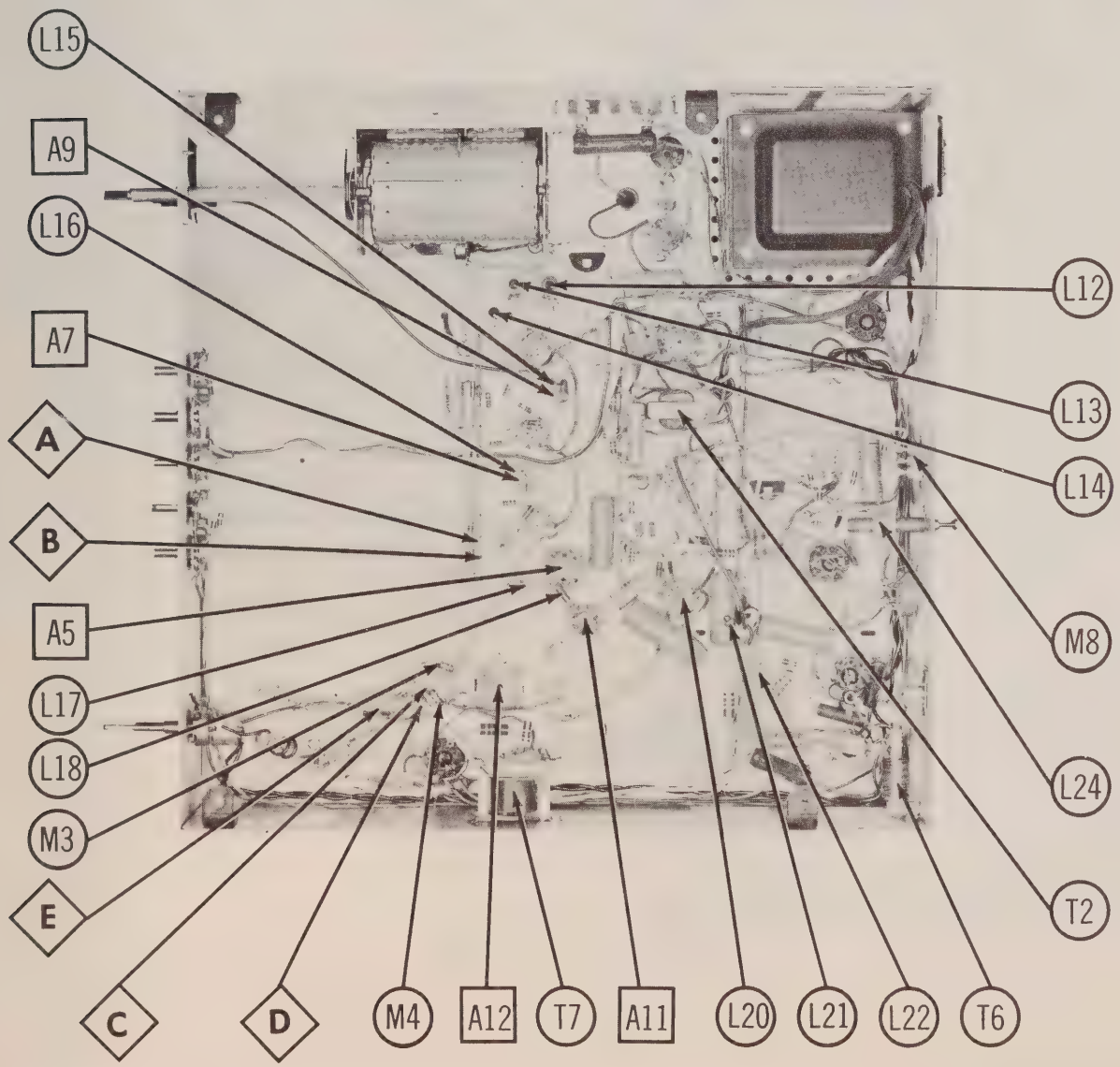
KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.




CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

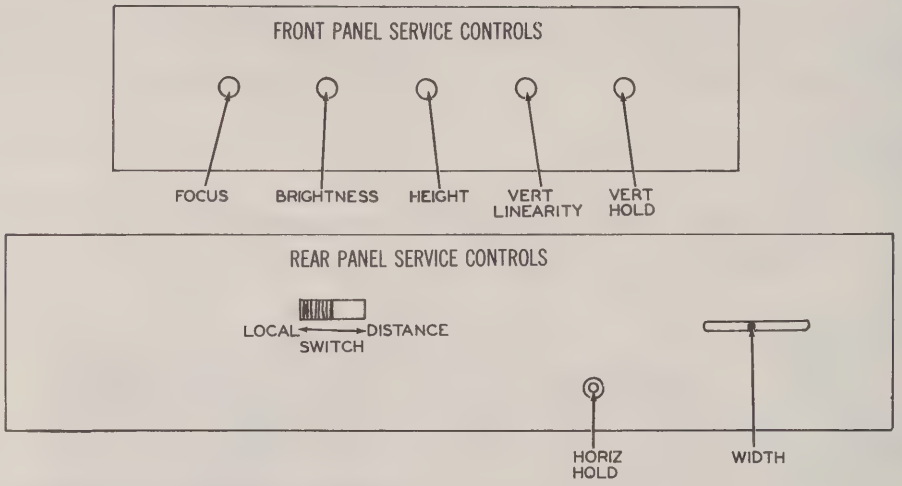
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 4 wood screws holding a strip of molding at the top of the safety glass. Remove molding and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION




HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horiz. oscillator circuit can be made from rear panel of the chassis. Adjust the Horiz. hold slug (L24) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary L23 located on top of chassis. (See tube placement chart.)

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (For location see Tube Placement Chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

# DISASSEMBLY INSTRUCTIONS

1. Remove 4 push-on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect speaker plug. Remove 4 speaker nuts.
4. Remove speaker.
5. Remove 4 chassis bolts. Remove chassis.

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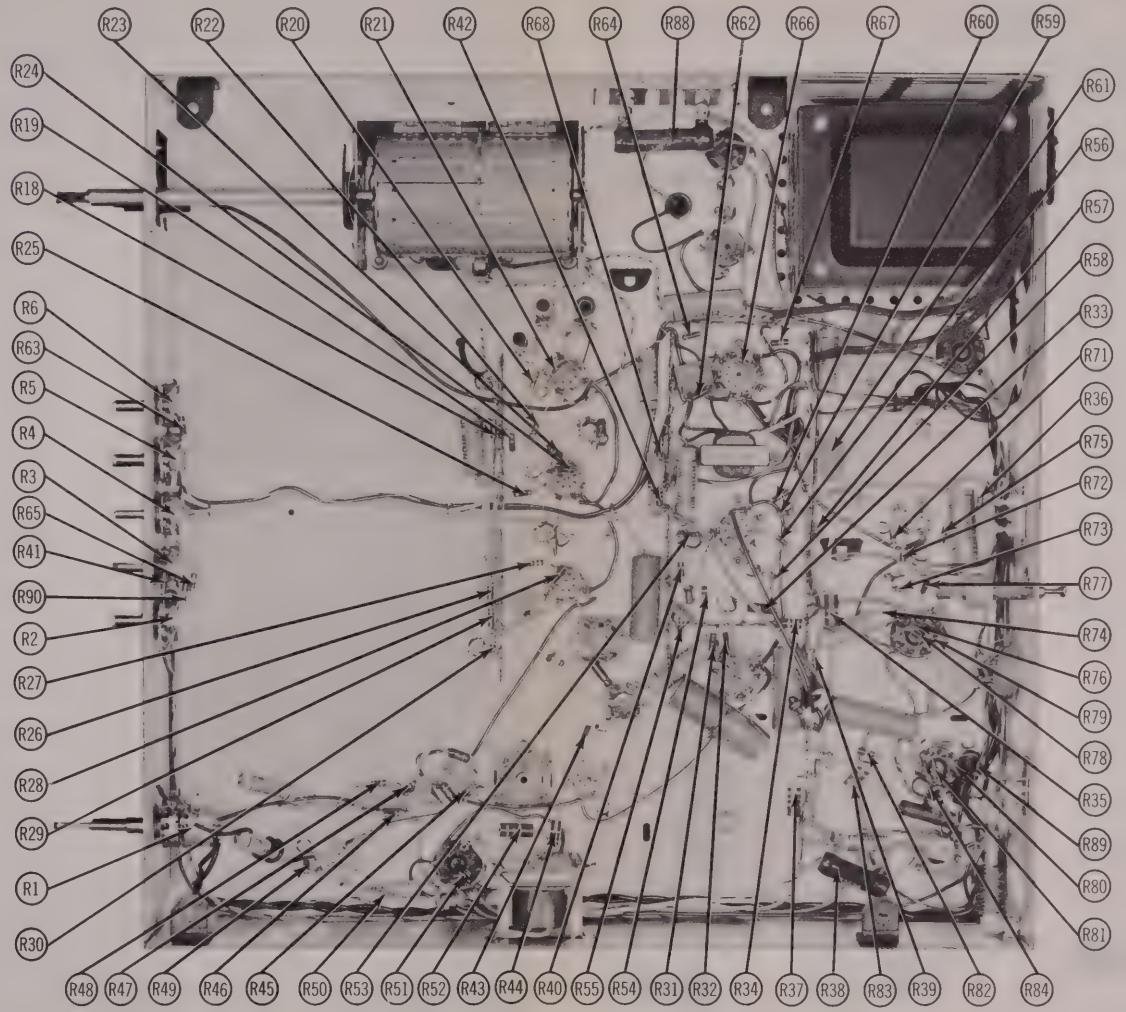


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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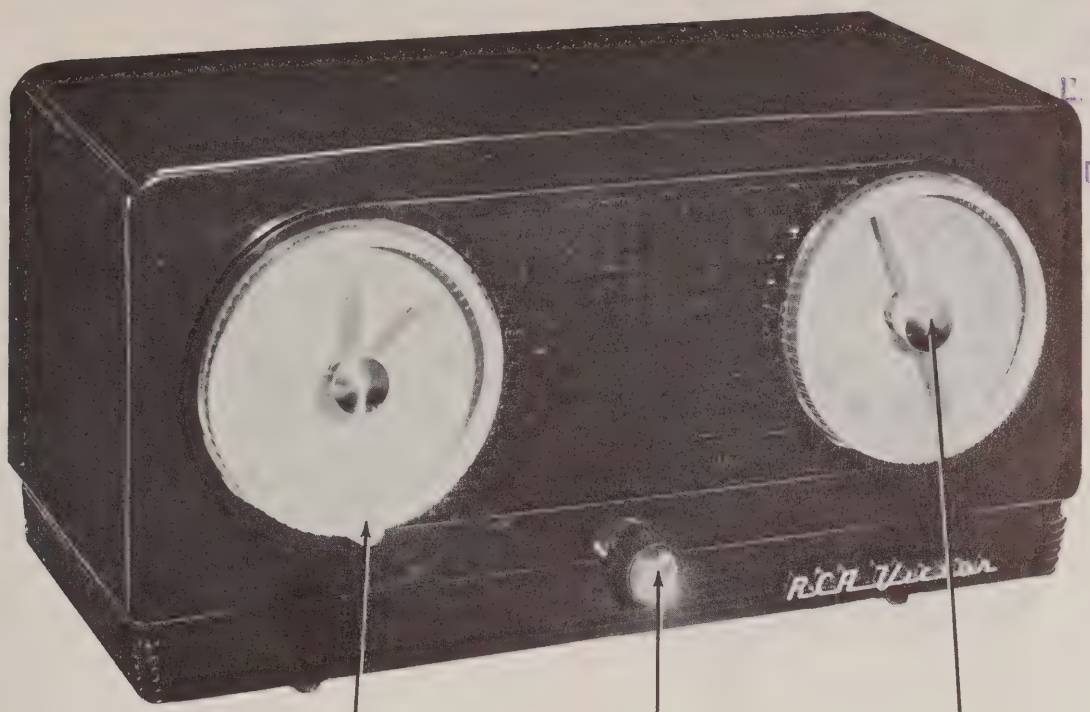
RCA VICTOR MODELS 4-C-531, 4-C-532, 4-C-533, 4-C-534, 4-C-535 (Ch. RC-1144)




RCA VICTOR MODELS 4-C-531, 4-C-532, 4-C-533, 4-C-534, 4-C-535 (Ch. RC-1144)

| | |
|---|---|
| TRADE NAME | RCA Victor Models 4-C-531, 4-C-532, 4-C-533, 4-C-534, 4-C-535 (Ch. RC-1144) |
| MANUFACTURER | RCA Victor Div., Radio Corp. of America , Camden, N.J. |
| TYPE SET | AC Operated AM Superheterodyne Receiver With Electric Clock |
| TUBES (Five) | Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier |
| POWER SUPPLY | 110-120 Volts AC-60 Cycles — RATING .27 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 540KC-1620KC |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2. | " | High side to antenna stator lug. Low side to chassis. | " | " | " | A3, A4 | " |
| 3. | | Loop | 1620KC | " | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 4. | | " | 1400KC | Tune to 1400KC signal | " | A6 | " |
| 5. | | " | 600KC | Tune to 600KC signal | " | A7 | Adjust for maximum output while rocking tuning gang thru 600KC signal. Repeat steps 3, 4 and 5. |

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# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: RCA Victor PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | IF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V3 | Det.-AVC-AF Amp. | 12AV6 | 12AV6 | 7BT | |
| V4 | Output | 50C5 | 50C5 | 7CV | |
| V5 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: RCA Victor PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 80 | 150 | 75980 | PRS150/80-40 | | BBRD8415 | | TCD498 | TVA-3451 | Red |
| B | 30 | 150 | | | | | | | | Green |
| C | 10 | 150 | | | | | | | | Blue |
| C2 | 56 | | 75784 | SI56 | D6-560 | TP31 | GP1K-560 | UC-5456 | 5GA-Q56 | |
| C3 | 4.7 | | 77471 | | | | | | | |
| C4 | .047 | 400 | 73553 | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C5A | 220 | | | | | | | | | |
| B | 5000 | | | | | | | | | |
| C | 5000 | | ♦79058 | ♦PA-113-2 | ♦PC-151 | ♦116TM2 | ♦1408-02 | | ♦DT-2 | |
| D | 250 | | | | | | | | | |
| E | | | | | | | | | | |
| C6 | .015 | 400 | 73797 | P488-015 | | CUB6S15 | | PT6115 | 4TM-S15 | |
| C7 | .047 | 400 | 75071 | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C8 | .1 | 400 | 73551 | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |

♦ Items C5A, C5B, C5C, C5D, C5E, R7A, R7B, R7C are combined in one unit.
When replacing items separately, C5D and C5E should total 250MMF.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: RCA Victor PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500KΩ | ½ | 79281 | Q13-133 | A47-500K-Z | B-59 | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |

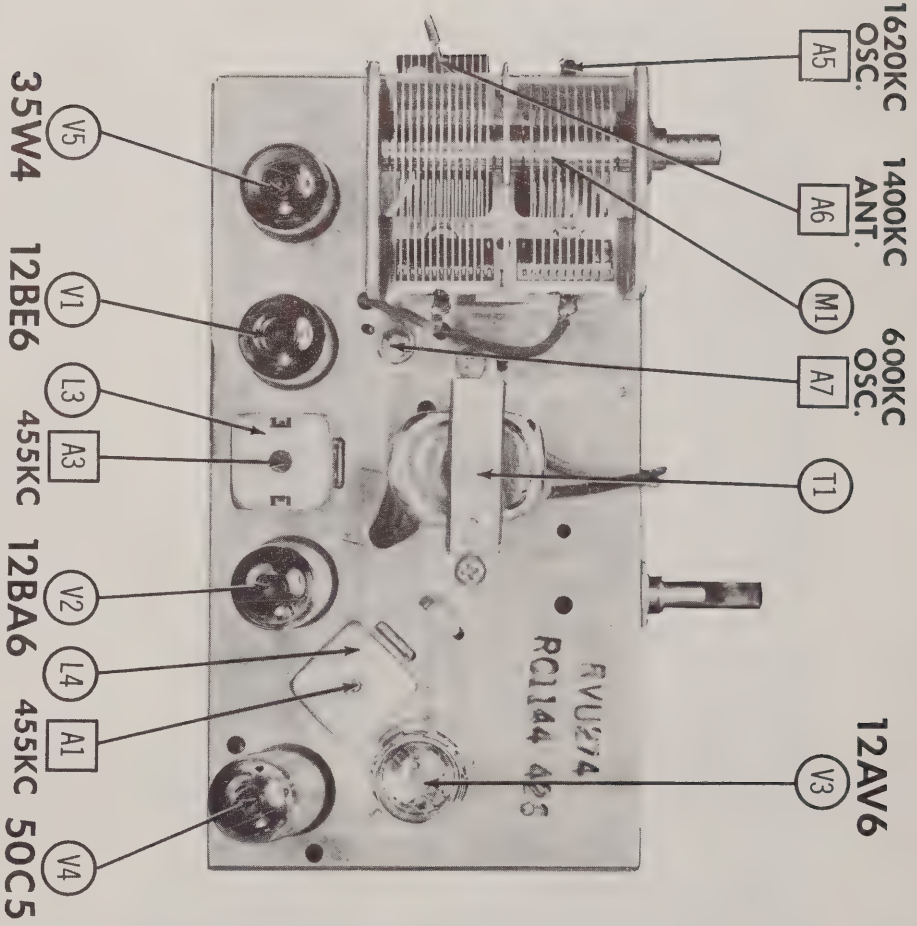
## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: RCA Victor PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 33KΩ | ½ | 504333 | BTS-33K | |
| R3 | 100Ω | ½ | 504110 | BTS-100 | |
| R4 | 100Ω | ½ | 504110 | BTS-100 | |
| R5 | 47KΩ | ½ | 504347 | BTS-47K | |
| R6 | 3.3Meg | ½ | 504533 | BTS-3.3Meg | |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: RCA Victor PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R7A | 6.8Meg | ½ | | BTS-6.8Meg | |
| B | 470KΩ | ½ | ♦79058 | BTS-470K | |
| C | 470KΩ | ½ | | BTS-470K | |
| R8 | 150Ω | ½ | 503115 | BTS-150 | |
| R9 | 1200Ω | 1 | 513212 | BTS-1200 | |
| R10 | 33Ω | 1 | 514033 | | |

♦ Items R7A, R7B, R7C, C5A, C5B, C5C, C5D and C5E are combined in one unit.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | RCA Victor PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T1 | 2.4KΩ | 3.1Ω | 79283 | A-3330① | A-3031 ① | | Z1102 ① | 24S50A ① | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | RCA Victor PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.1Ω | 79284 | ST-113 Mod. P4-X | 4A07 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | RCA Victor PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Loop Ant. | 2.3Ω | | 79274 | | | | Includes cabinet back |
| L2 | Osc. Coil | .7Ω | 5Ω | 79057 | 14-1074 | BC-381 | 71-Osc. | |
| L3 | Input IF | 17Ω | 17Ω | 75486 | 16-6758 | BC-352 | 12-C1 | |
| L4 | Output IF | 15Ω | 15Ω | 75487 | 16-6770 | BC-355 | 12-C6 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | RCA Victor PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | 79290 | 23-415MMF, 14-132MMF |
| | Cabinet | Y2641 | Model 4-C-531 |
| | Cabinet | Y2646 | Model 4-C-532 |
| | Cabinet | Y2647 | Model 4-C-533 |
| | Cabinet | Y2648 | Model 4-C-534 |
| | Cabinet | Y2649 | Model 4-C-535 |
| | Knob | 79267 | Tuning - includes pointer |
| | Knob | 79270 | Volume - Model 4-C-531 |
| | Knob | 79356 | Volume - Models 4-C-532, 4-C-533, 4-C-534, 4-C-535 |
| | Knob | 79264 | Clock timer |

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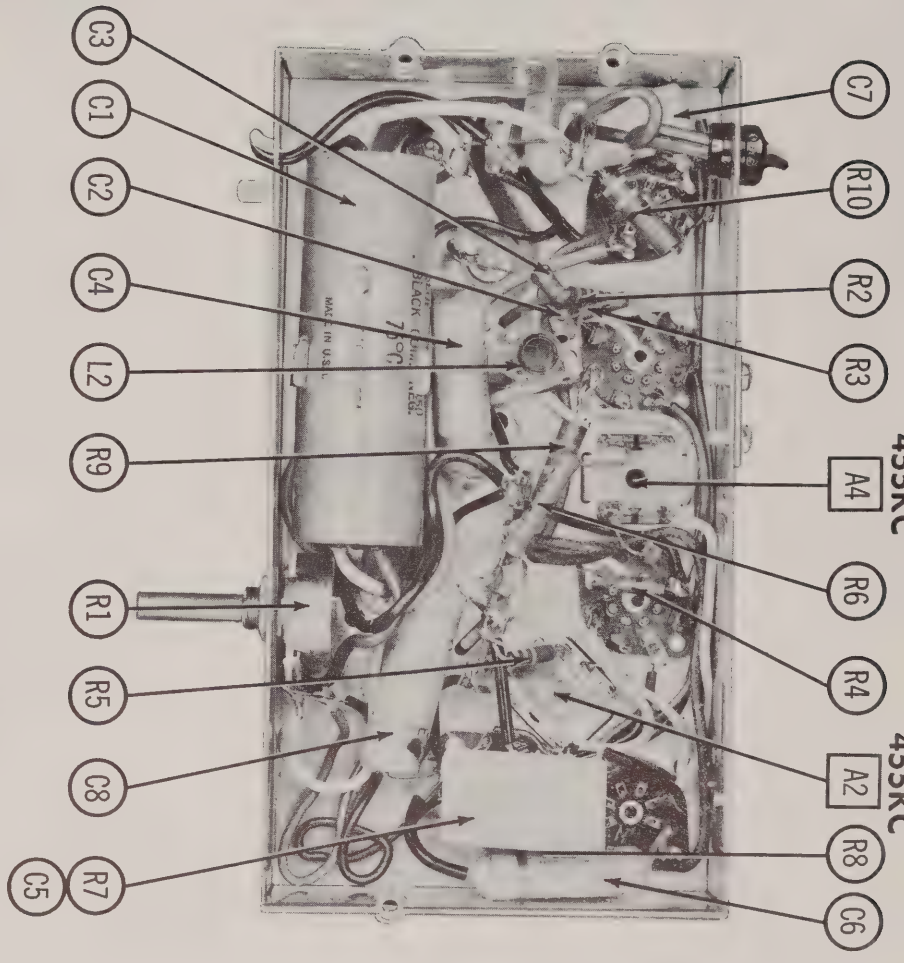
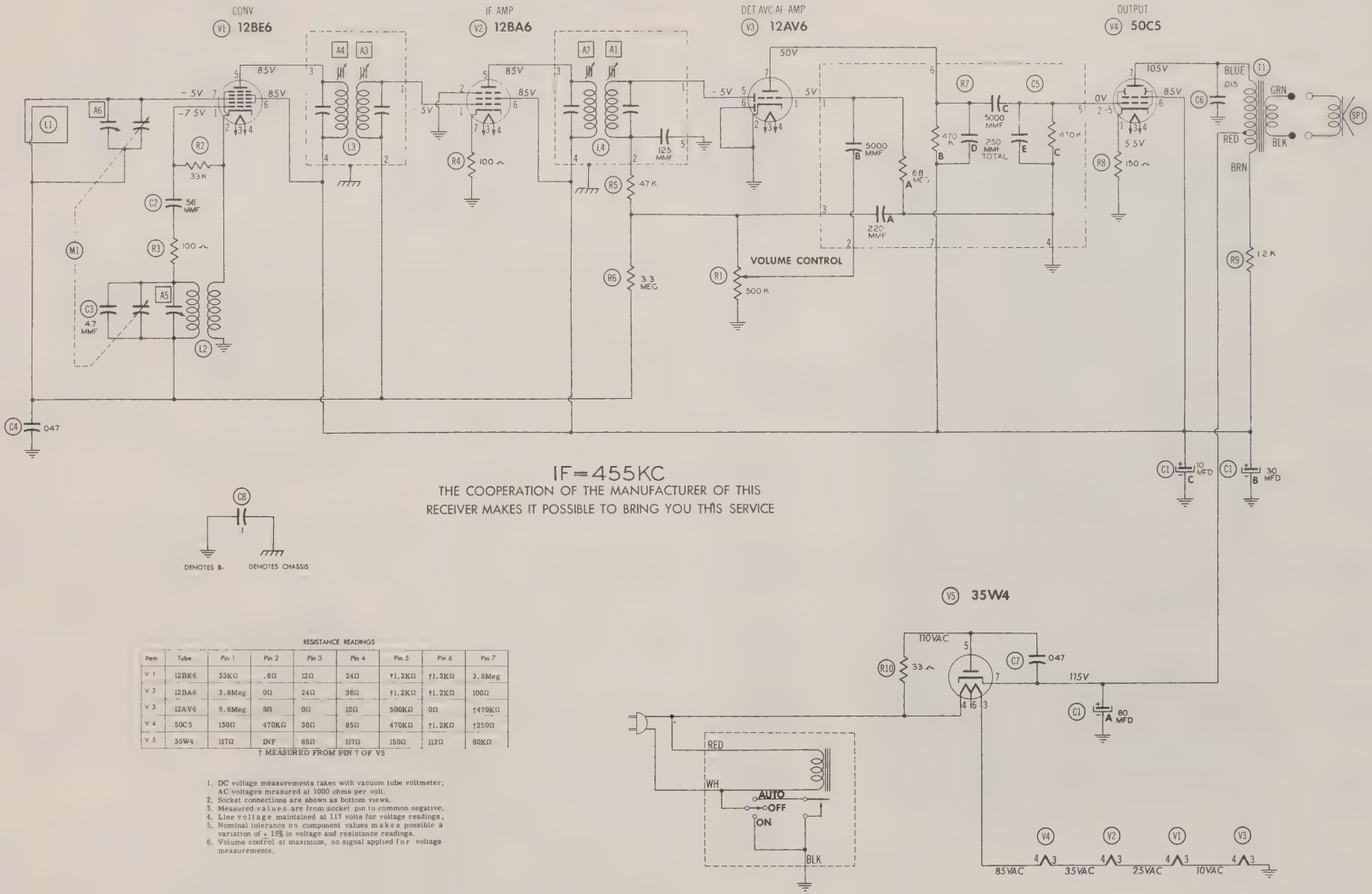
DENVER, COLO

# CHASSIS—BOTTOM VIEW






RCA VICTOR
MODEL 4-C-531 (Ch. RC-1144)




# IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 33KΩ | .6Ω | 12Ω | 24Ω | †1.2KΩ | †1.2KΩ | 3.8Meg |
| V 2 | 12BA6 | 3.8Meg | 0Ω | 24Ω | 36Ω | †1.2KΩ | †1.2KΩ | 100Ω |
| V 3 | 12AV6 | 6.8Meg | 0Ω | 0Ω | 12Ω | 500KΩ | 0Ω | †470KΩ |
| V 4 | 50C5 | 150Ω | 470KΩ | 36Ω | 85Ω | 470KΩ | †1.2KΩ | †250Ω |
| V 5 | 35W4 | 117Ω | INF | 85Ω | 117Ω | 150Ω | 112Ω | 60KΩ |

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# TRAVLER
# MODELS 5180B, M

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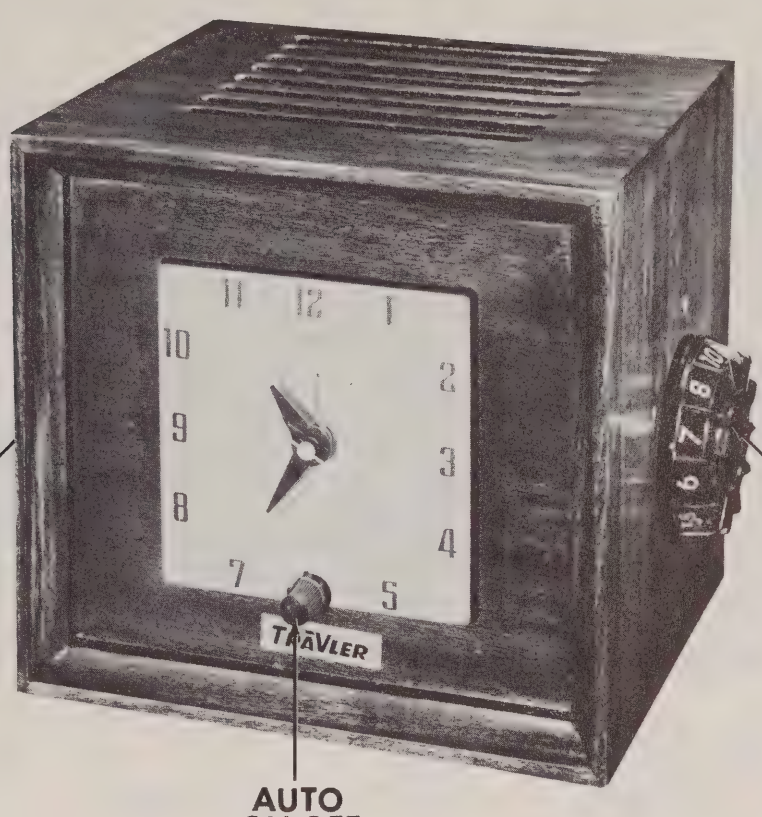
TRAVLER
MODELS 5180B, M




TRAVLER
MODELS 5180B, M

| | |
|---|---|
| TRADE NAME | Travler Model 5180B, M |
| MANUFACTURER | Travler Radio & Television Corp., 571 W. Jackson Blvd., Chicago, Ill. |
| TYPE SET | AC Operated, AM Superheterodyne Receiver With Electric Clock |
| TUBES (Four) | Types 12BE6 Conv., 12AV6 Det. -AVC-AF Amp., 50C5 Output, 35W4 Rectifier |
| POWER SUPPLY | 105-125 Volts AC-60 Cycles |
| RATING | .22Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535-1650KC |

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

Use isolation transformer, if available. If not, connect a 1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | .1MFD | High side to antenna stator lug on tuning gang. Low side to B- | 455KC (400~ Mod.) | Tuning Gang Fully Open | Across voice coil | A1, A2 | Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. |
| 2 | " | " | 1650KC | " | " | A3 | Adjust for maximum output. |
| 3 | 200MMF | High side to junction of external antenna and antenna coil (L1). Low side to B-. | 1400KC | Tune to 1400KC signal. | " | A4 | " |

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# PARTS LIST AND DESCRIPTIONS

TRAVLER MODEL 5180B

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA: TRAVLER PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 12BE6 | 12BE6 | 7CH | |
| V2 | Det-AVC-AF Amp. | 12AV6 | 12AV6 | 7BT | |
| V3 | Output | 50C5 | 50C5 | 7CV | |
| V4 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: TRAVEER PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 40 | 150 | EC-28A | PRS86D4A | | BBRT4415C | | FP311. 4 | | Red |
| B | 20 | 150 | | | | | | | | Blue |
| C | 10 | 25 | | | | | | | | Yellow |
| C2 | . 05 | 200 | PC-2 | P288-05 | DF-503 | PJ2S5 | | PT415 | ZTM-S5 | |
| C3 | 2 | | | SI 2. 2 | TCZ-2. 2 | TZ05 | NPOK-2R2 | | 5TCCB-V22 | Note 1 |
| C4 | 47 | | CC-12 | SI47 | D6-470 | TP29 | GP1K-470 | NC-5447 | 5GA-Q47 | |
| C5A | 220 | | | | | | | | | |
| B | 2000 | | | | | | | | | |
| C | 5000 | | ♦MC-19 | ♦PA-113-1 | ♦PC-150 | ♦116TM1 | ♦1408-01 | | ♦DT-1 | |
| D | 250 | | | | | | | | | |
| E | | | | | | | | | | |
| C6 | 5000 | | CC-3 | BPD-005 | DD-502 | K080 | 801-005 | DC-525 | 5HK-D5 | |
| C7 | . 05 | 400 | PC-5 | 489ZX-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C8 | . 05 | 400 | PC-5 | 489ZX-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |

Note 1: Some models use a 10MMF in this application.
♦ Items C5A, C5B, C5C, C5D, C5E, R5A, R5B and R5C are combined in one unit.
When replacing items seperately, items C5D and C5E should total 250 MMF

## CONTROLS

| ITEM No. | RATING: RESIST-ANCE | RATING: WATTS | REPLACEMENT DATA: TRAVLER PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 1Meg | ½ | VC-49 | Q13-137 | A47-1Meg-Z | B-70 | U-53 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: TRAVLER PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 33Ω | ½ | 1R-17 | BTS-33 | |
| R3 | 22KΩ | ½ | 1R-9 | BTS-22K | |
| R4 | 3. 3Meg | ½ | 1R-23 | BTS-3. 3Meg | |
| R5A | 6. 8Meg | ½ | ♦MC-19 | BTS-6. 8Meg | |
| B | 470KΩ | ½ | | BTS-470K | |
| C | 470KΩ | ½ | | BTS-470K | |

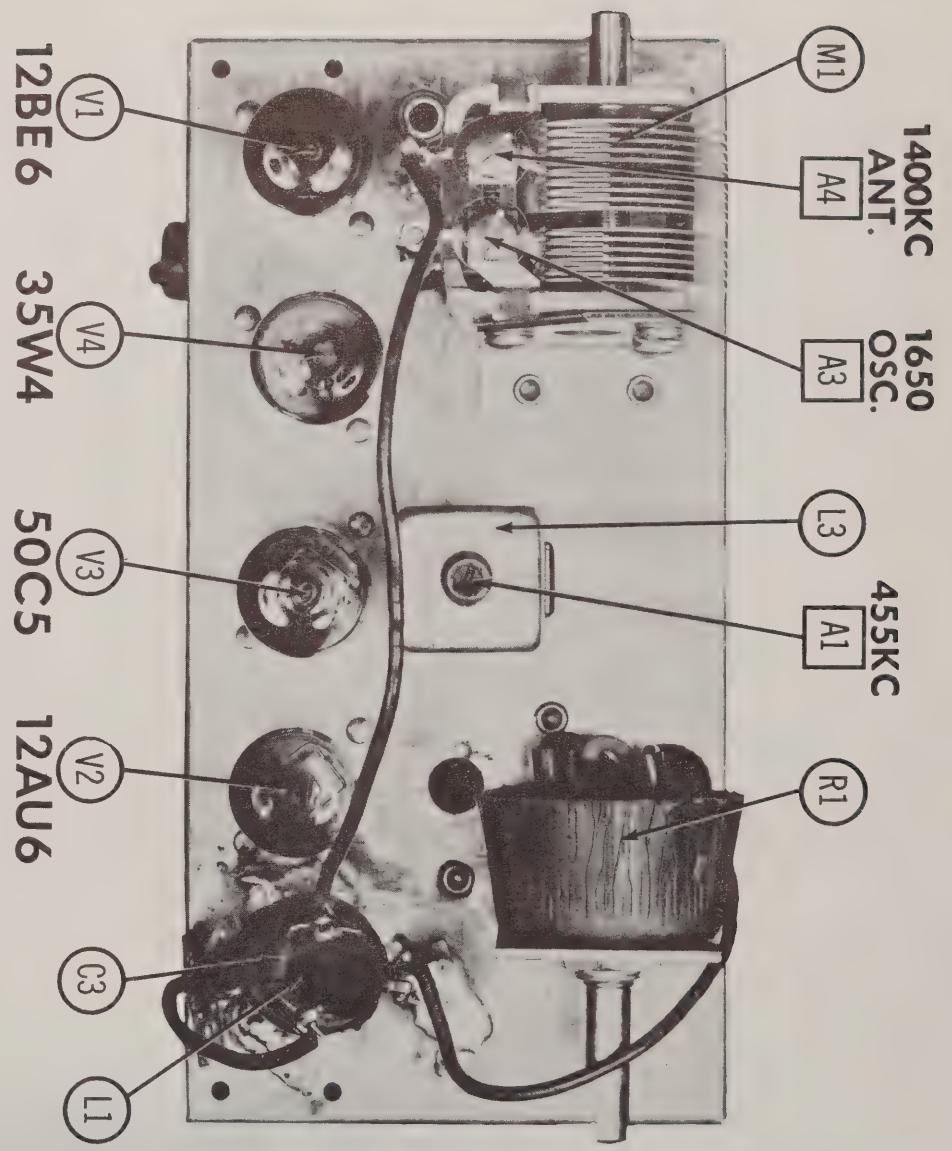
| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: TRAVLER PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R6 | 150Ω | ½ | 1R-14 | BTS-150 | |
| R7 | 2200Ω | 1 | 1R-25 | BTA-2200 | |
| R8 | 33Ω | ½ | 1R-17 | BTS-33 | |
| R9 | 47Ω | 1 | 1R-41 | | |
| R10 | 220KΩ | ½ | 1R-20 | BTS-220K | |

♦ Items R5A, R5B, R5C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE: PRI. | IMPEDANCE: SEC. | REPLACEMENT DATA: TRAVLER PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 2. 4KΩ | 3. 4Ω | Part of speaker | A-3332 | A-3025 | S-12X | Z1101 | | |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | TRAVLER PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3.4Ω | Spk. -22B<br>Spk. -35 ① | ST-113<br>Mod. P4-X | 4A07 | ① Alternate 4" PM Speaker |

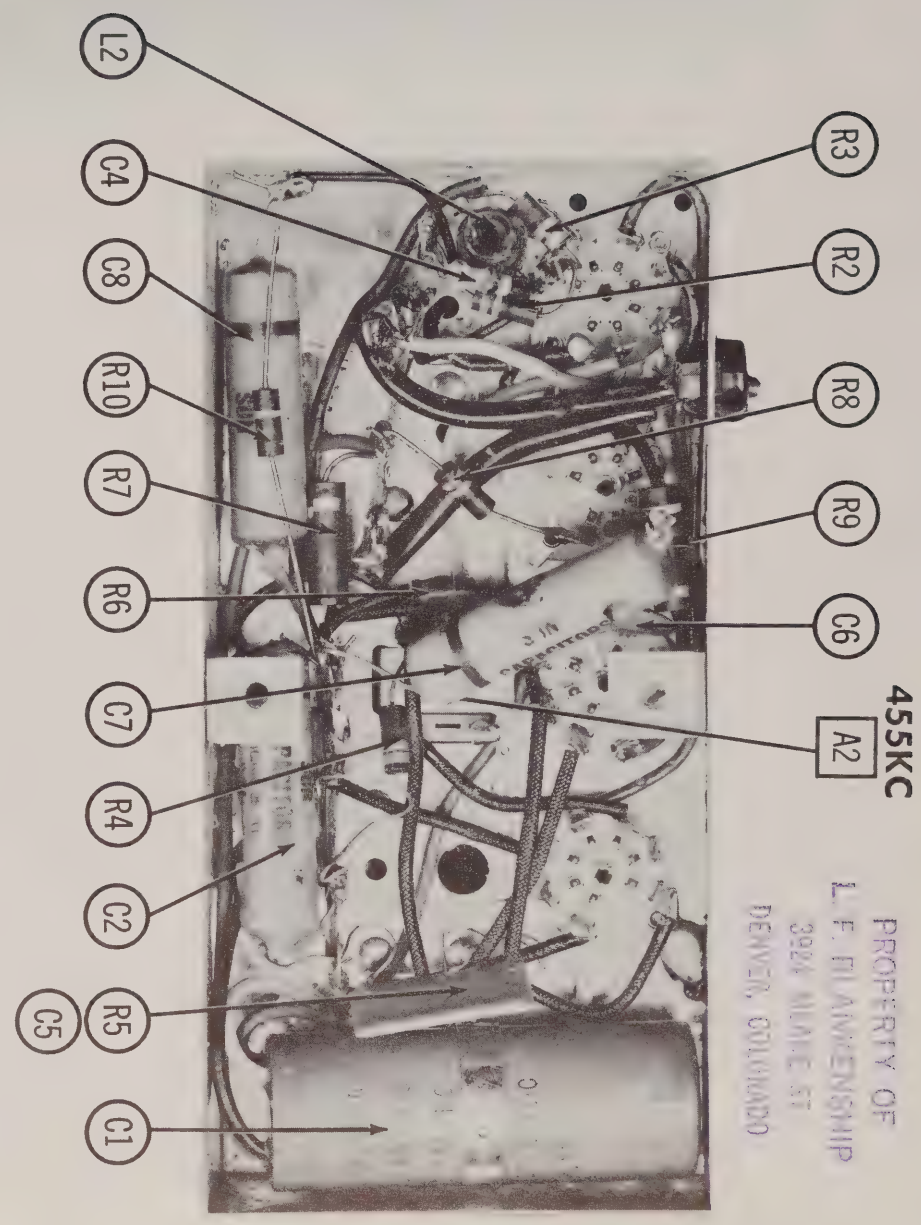
## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | TRAVLER PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | |
| L1 | Ant. Coil | 24Ω | 3.6Ω | LA-6 | 14-7413 | | | |
| L2 | Osc. Coil | .6Ω | 7.5Ω | LO-20 | 14-1040 | | 71-OSC | |
| L3 | IF Coil | 16Ω | 16Ω | LI-12 | | | | |

## MISCELLANEOUS

| ITEM No. | PART NAME | TRAVLER PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning capacitor | GG-12 | 13-240MMF, 13-110MMF. |

# CHASSIS—BOTTOM VIEW

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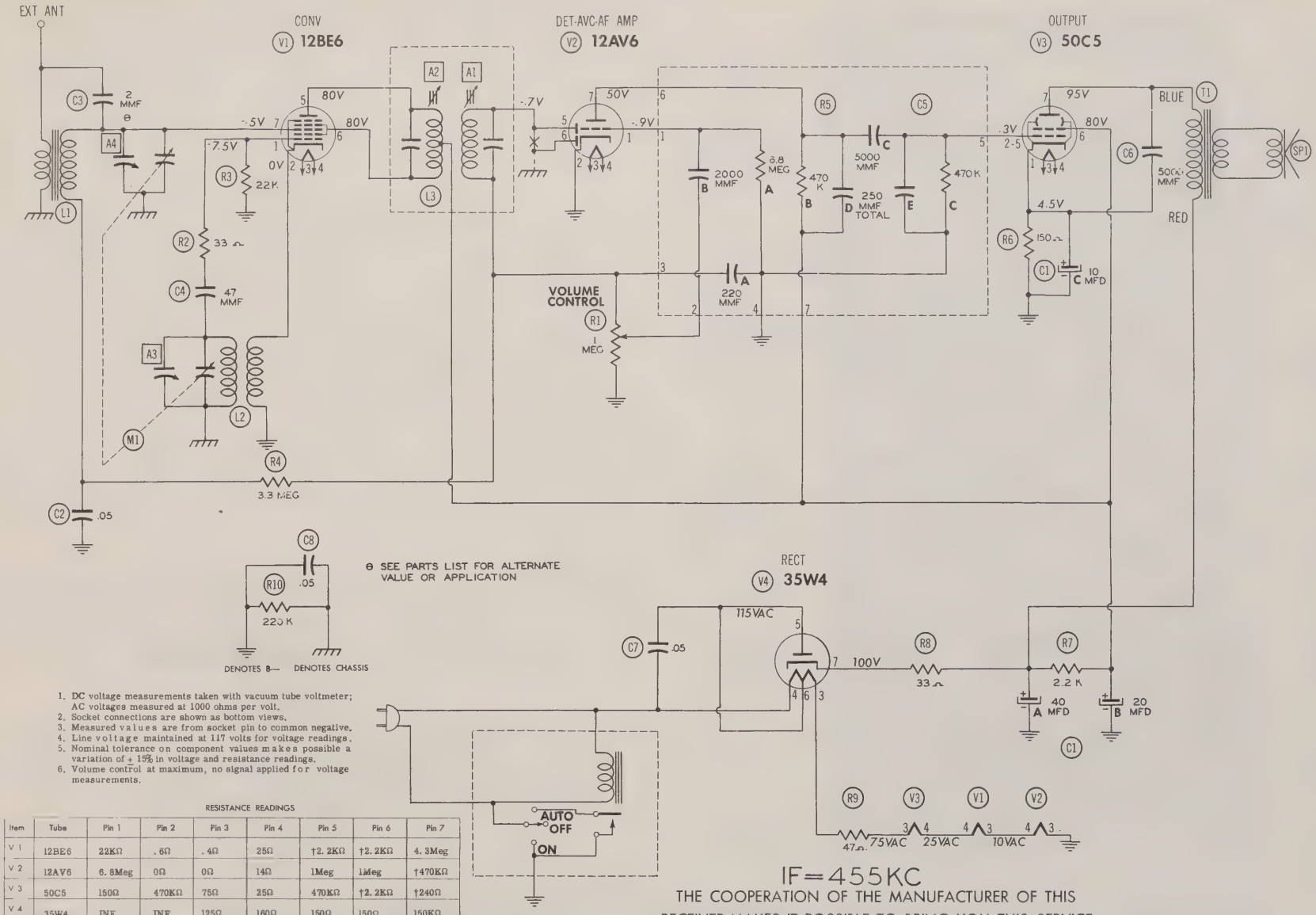
TRAVLER MODEL 5180B

TRAVLER MODEL 5180B




θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BE6 | 22KΩ | .6Ω | .4Ω | 25Ω | †2.2KΩ | †2.2KΩ | 4.3Meg |
| V 2 | 12AV6 | 6.8Meg | 0Ω | 0Ω | 14Ω | 1Meg | 1Meg | †470KΩ |
| V 3 | 50C5 | 150Ω | 470KΩ | 75Ω | 25Ω | 470KΩ | †2.2KΩ | †240Ω |
| V 4 | 35W4 | INF | INF | 125Ω | 160Ω | 150Ω | 150Ω | 150KΩ |

† MEASURED FROM PIN 7 OF V4.

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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RETMA MEMBER

# TRAVLER MODEL 5305

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DENVER, COLORADO

TRAVLER MODEL 5305

TRAVLER MODEL 5305

| | |
|---|---|
| TRADE NAME | Travler Model 5305 |
| MANUFACTURER | Travler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill. |
| TYPE SET | Three Power Portable AM Superheterodyne Receiver |
| TUBES (Four) | Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Output, |
| POWER SUPPLY RATING | 110-120 Volts AC-DC (or) 3 Volts "A" Supply & 90 Volts "B" Supply<br>.14 Amp. @ 117 Volts AC (or) 150MA @ 3 Volts DC & 8.5MA @ 90 Volts DC |
| TUNING RANGE—BROADCAST | 535KC - 1630KC |

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1MFD | High side to antenna stator lug on tuning gang. Low side to B-. | 455KC (400~Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation. |
| 2. | " | " | 1630KC | " | " | A5 | " |
| 3. | " | " | 535KC | Tuning gang fully closed | " | A6 | Adjust for maximum output. Repeat step 2. |
| 4. | | Loop | 1400KC | Tune to 1400KC signal | " | A7 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |

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# PARTS LIST AND DESCRIPTIONS

TRAVLER MODEL 5305

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | TRAVLER PART No. | STANDARD REPLACEMENT | | |
| V1 | Converter | 1R5 | 1R5 | 7AT | |
| V2 | IF Amplifier | 1U4 | 1U4 | 6AR | |
| V3 | Det.-AVC-AF Amp. | 1U5 | 1U5 | 6BW | |
| V4 | Output | 3V4 | 3V4 | 6BX | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | TRAVLER PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ▲40 | 150 | EC-32 | AFH3-09 | | C008 | | | | |
| B | ■40 | 150 | | | | | | | | |
| C | 20 | 150 | | | | | | | | |
| C2 | 70 | 10 | EC-6 | | | BBR-70-10T | | | | |
| C3 | 10000 | | CC-4 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C4 | 100 | | CC-5 | SI100 | D6-101 | TP34 | GP1K-101 | UC-531 | 5GA-T1 | |
| C5 | 10000 | | CC-4 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C6 | 10000 | | CC-4 | BPD-01 | DD-103 | K082 | 811-01 | DC-511 | 5HK-S1 | |
| C7 | .1 | 200 | PC-3 | P288-1 | DF-104 | CUB2P1 | | PT401 | 2TM-P1 | |
| C8A | 150 | | | | | TP36 | GP2K-151 | UC-5315 | | |
| B | 2000 | | | | | K072 | 801-002 | DC-522 | | |
| C | 150 | | ♦MC-18 | ♦PA-136 | ♦PC-165 | TP36 | GP2K-151 | UC-5315 | ♦DP-1 | |
| D | 10000 | | | | | K082 | 811-01 | DC-511 | | |
| E | 5000 | | | | | K080 | 811-005 | DC-525 | | |
| C9 | 220 | | CC-33 | SI220 | D6-221 | TP39 | GP2K-221 | UC-5322 | 5GA-T22 | |
| C10 | 1500 | | CC-20 | SI1500 | D6-152 | TP54 | GP2L-152 | UC-5215 | 5HK-D15 | |
| C11 | .05 | 400 | PC-5 | P488-05 | DF-503 | CUB4S5 | | PT415 | 4TM-S5 | |
| C12 | .1 | 400 | PC-8 | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |

♦ Items C8A, C8B, C8C, C8D, C8E, R7A, R7B, R7C, R7D are combined in one unit.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | TRAVLER PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1 | 1.5Meg | ½ | VC-47 | | | | | Volume & Switch |

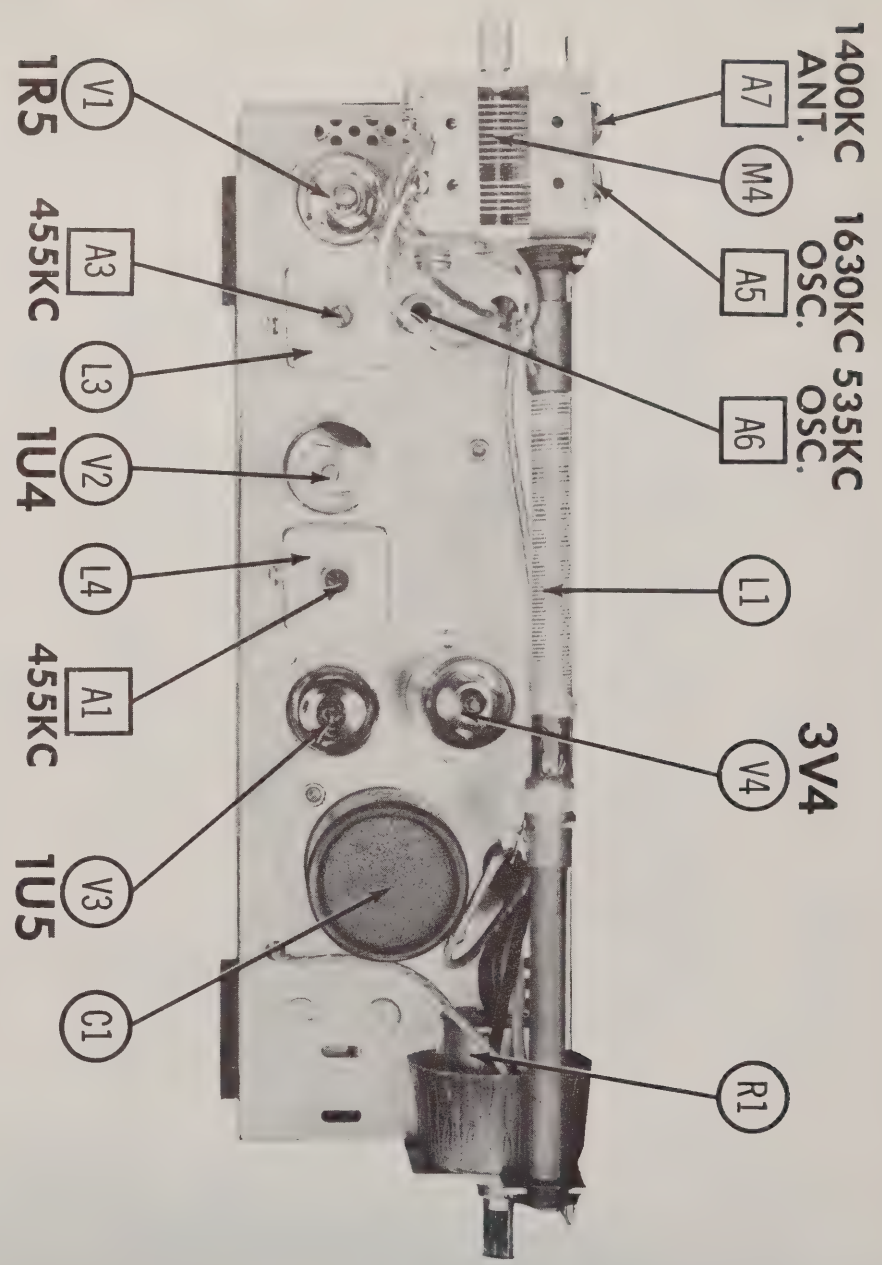
## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | TRAVLER PART No. | IRC PART No. | |
| R2 | 100KΩ | ½ | IR-43 | BTS-100K | |
| R3 | 15KΩ | ½ | IR-63 | BTS-15K | |
| R4 | 10Meg | ½ | IR-3 | BTS-10Meg | |
| R5 | 3.3Meg | ½ | IR-23 | BTS-3.3Meg | |
| R6 | 2.2Meg | ½ | IR-13 | BTS-2.2Meg | |
| R7A | 10Meg | ½ | | BTS-10Meg | |
| B | 4.7Meg | ½ | ♦MC-18 | BTS-4.7Meg | |
| C | 1Meg | ½ | | BTS-1Meg | |
| D | 3.3Meg | ½ | | BTS-3.3Meg | |
| R8 | 270Ω | ½ | IR-33 | BTS-270 | |
| R9 | 620Ω | ½ | IR-39 | BTS-620 | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | TRAVLER PART No. | IRC PART No. | |
| R10 | 33Ω | ½ | IR-17 | BTS-33 | |
| R11 | 470Ω | ½ | IR-1 | BTS-470 | |
| R12 | 220KΩ | ½ | IR-20 | BTS-220K | |
| R13 | 620Ω | ½ | IR-39 | BTS-620 | |
| R14 | 2200Ω | 1 | IR-25 | BTA-2200 | |
| R15A | 1050Ω | 10 | WR7A | | |
| B | 1050Ω | 10 | | | |
| R16 | 47Ω | 1 | IR-41 | BTA-47 | |
| R17 | 33Ω | ½ | IR-17 | BTS-33 | |
| R18 | 220KΩ | ½ | IR-20 | BTS-220K | |

♦ Items R7A, R7B, R7C, R7D, C8A, C8B, C8C, C8D, C8E are combined in one unit.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE PRI. | IMPEDANCE SEC. | REPLACEMENT DATA: TRAVLER PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 9.7KΩ | 3.3Ω | Part of Spkr. | A-3329 | A-2927 ① | S-11X | | 24S49 | ① Drill one new mounting hole. |

## SPEAKER

| ITEM No. | RATINGS SIZE | FIELD | V. C. IMP. | REPLACEMENT DATA: TRAVLER PART No. | JENSEN PART No. | QUAM PART No. | NOTES |
|---|---|---|---|---|---|---|---|
| SP1 | 4" | PM | 3.4Ω | SPK-29 | ST-113 Mod. P4-X① | 4A07 ① | ① Cut corner same as original unit. |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA: TRAVLER PART No. | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1 | Ant. Coil | 2.1Ω | | LL-30 | | | | |
| L2 | Osc. Coil | 1.3Ω | 9Ω | LO-18 | | | 71-Osc. | |
| L3 | Input IF | 34Ω | 34Ω | LI-10 | 16-6758 | BC-352 | 12-C1 | |
| L4 | Output IF | 42Ω | 42Ω | LI-11 | 16-6758 | BC-353 | 12-C2 | |

## SELENIUM RECTIFIER

| ITEM No. | RATING CURRENT | REPLACEMENT DATA: TRAVLER PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | MALLORY PART No. | SARKES TARZIAN PART No. | SELETRON PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| M1 | .064A | SR-2 | 1003A | RS75 | 6S75 | 75 | 5M4 | |

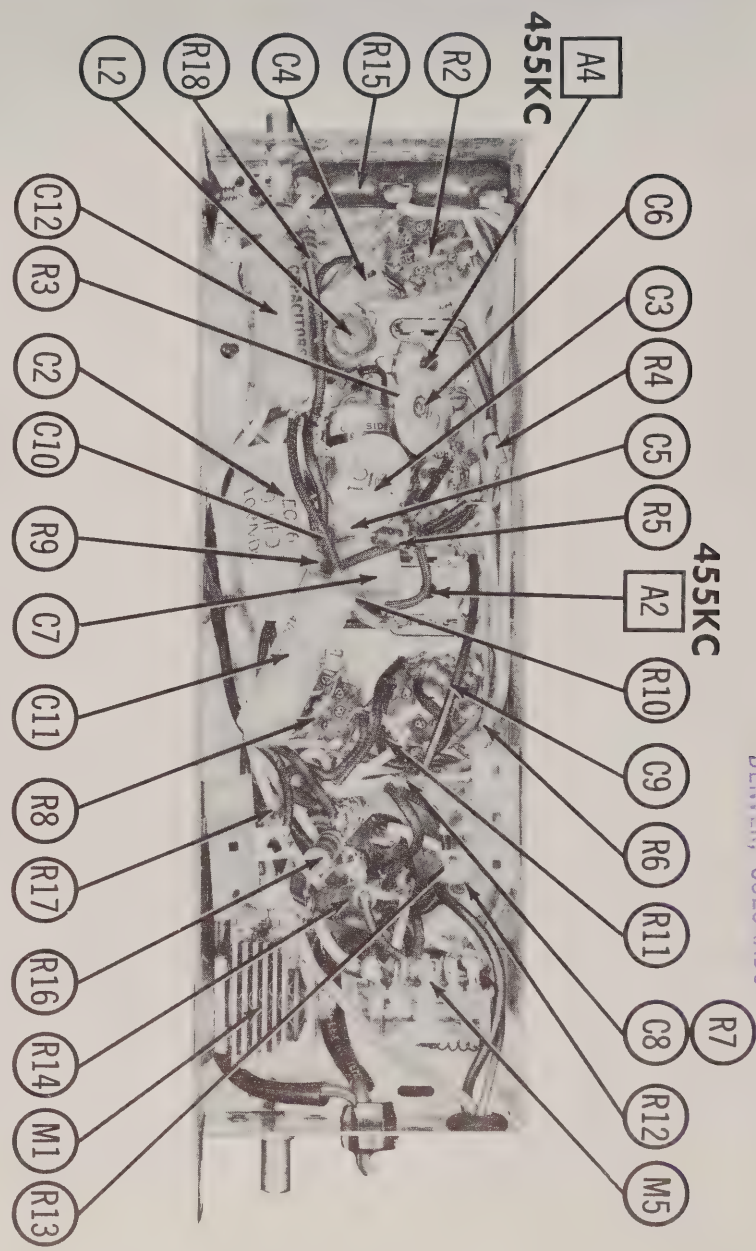
## BATTERIES

| ITEM No. | VOLTAGE | TRAVLER PART No. | REPLACEMENT DATA: EVEREADY "A" | EVEREADY "B" | EVEREADY "A-B" | BURGESS "A" | BURGESS "B" | BURGESS "A-B" | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| M2 | 1.5V | | 964 | | | 21R | | | Connect 2 in series |
| M3 | 45V | | | 455 | | | XX30 | | Connect 2 in series |

## MISCELLANEOUS

| ITEM No. | PART NAME | TRAVLER PART No. | NOTES |
|---|---|---|---|
| M4 | Tuning Cap. | GC-12 | 13-240MMF, 13-110MMF |
| M5 | Switch | SW-18 | Change-over |

## CHASSIS—BOTTOM VIEW

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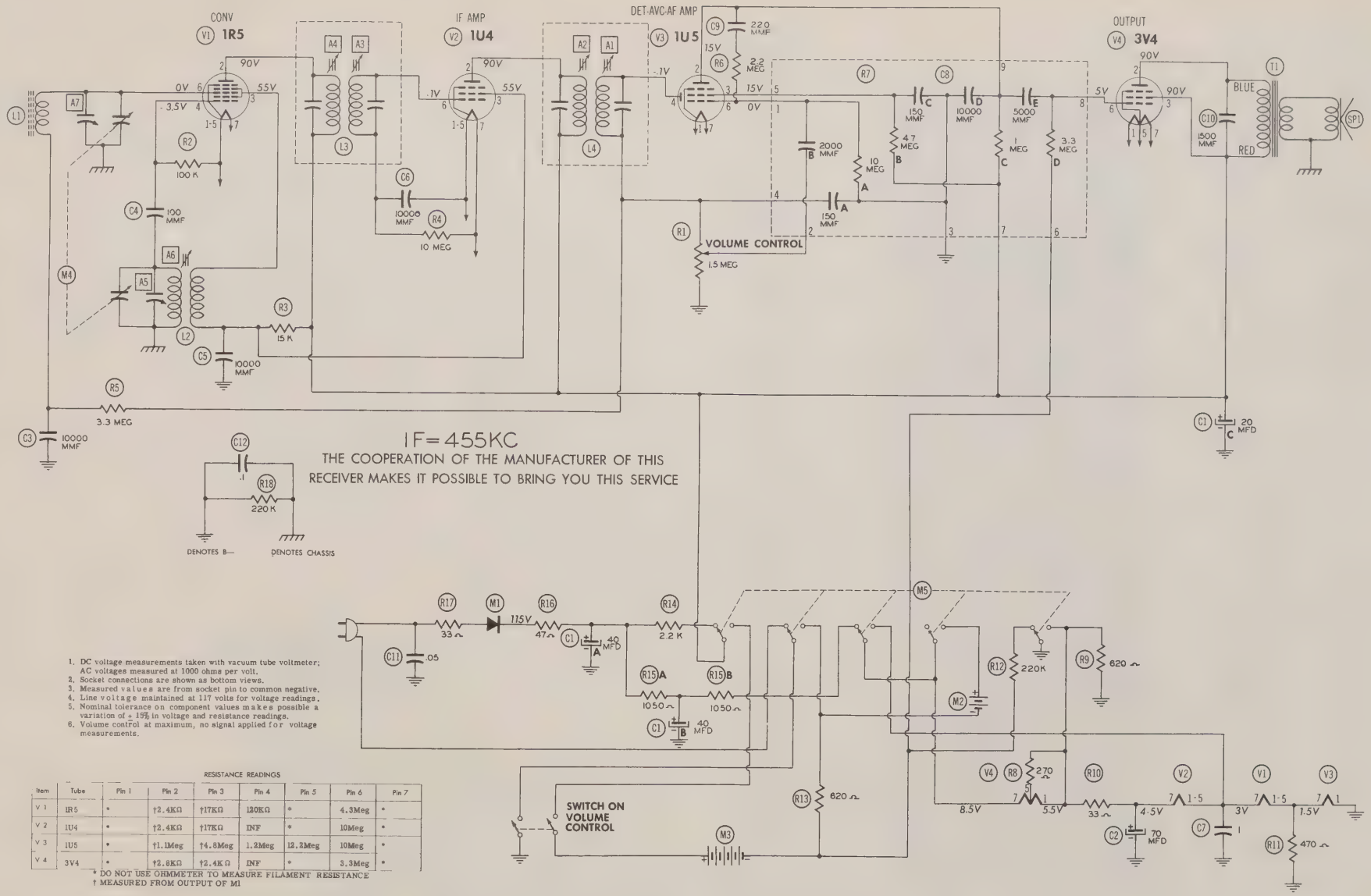
TRAVLER MODEL 5305




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 1R5 | * | †2.4KΩ | †17KΩ | 120KΩ | * | 4.3Meg | * |
| V 2 | 1U4 | * | †2.4KΩ | †17KΩ | INF | * | 10Meg | * |
| V 3 | 1U5 | * | †1.1Meg | †4.8Meg | 1.2Meg | 12.2Meg | 10Meg | * |
| V 4 | 3V4 | * | †2.8KΩ | †2.4KΩ | INF | * | 3.3Meg | * |

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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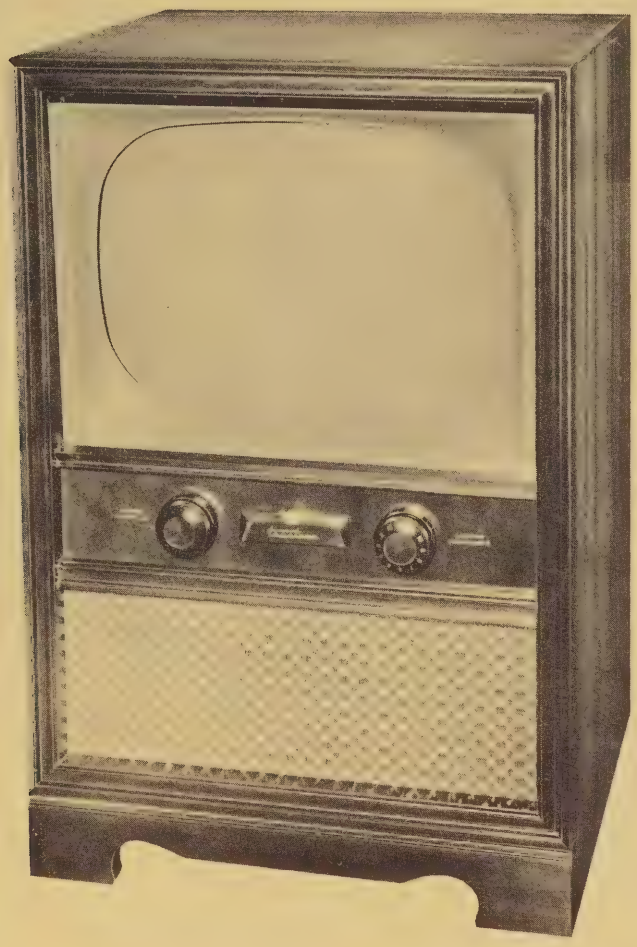

MODEL 2D1430

TRUETONE
MODEL 2D1430C

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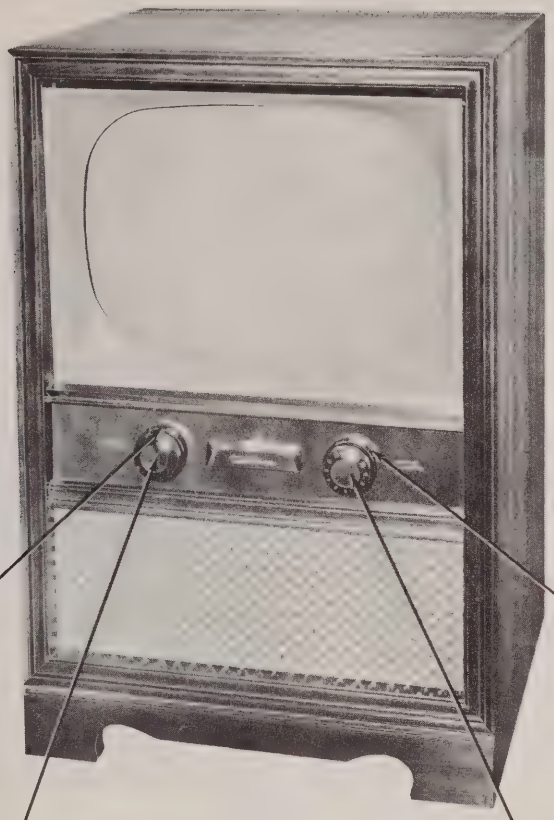


TRUETONE
MODEL 2D1430C

| | |
|---|---|
| TRADE NAME | Truetone Model 2D1430C |
| SUPPLIER | Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo. |
| TYPE SET | Television Receiver |
| TUBES | Twenty-three |
| POWER SUPPLY | 110-120 volts AC-60 Cycle — RATING 1.7 Amp. @ 117 volts AC |
| TUNING RANGE | Channels 2 thru 13, Video IF 26.2MC, Sound IF 21.7MC (Intercarrier) |

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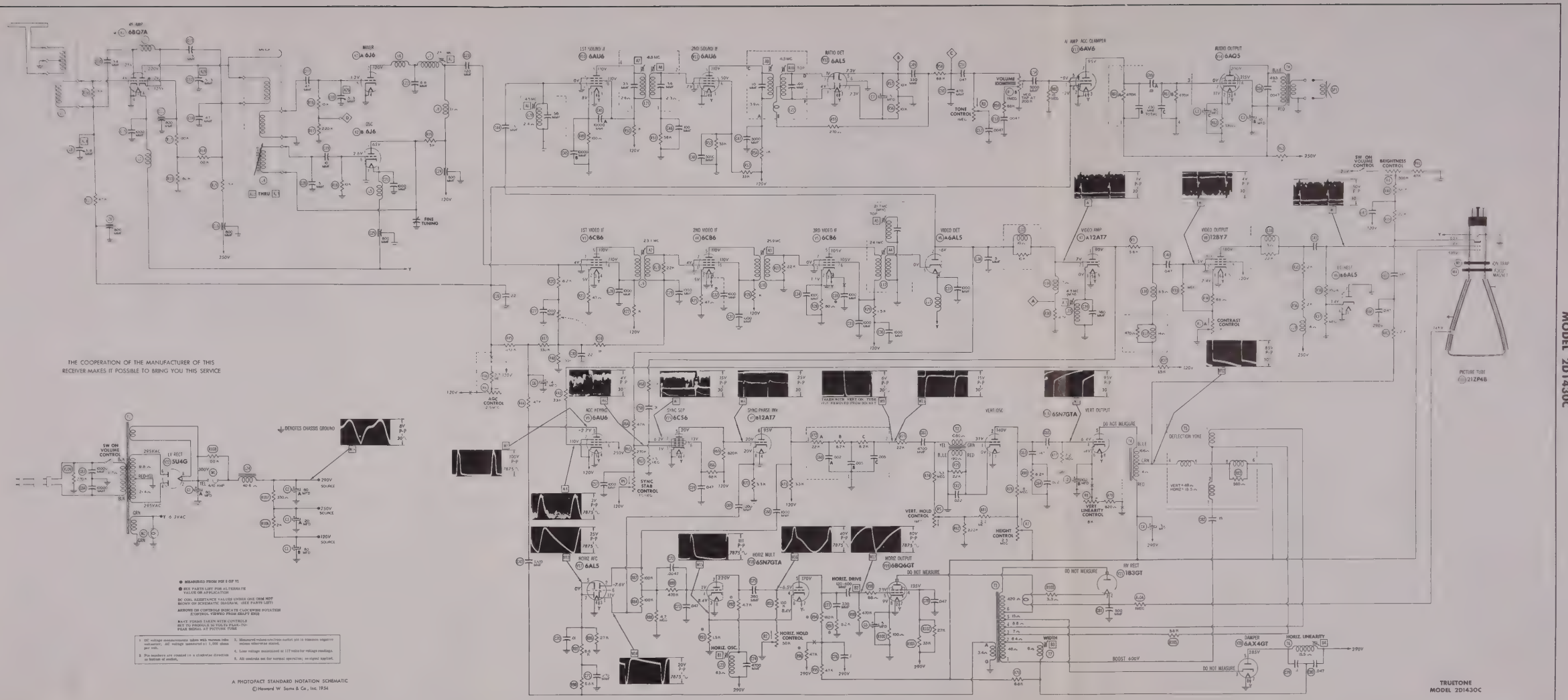
TRUETONE
MODEL 2D1430C
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1954
TRUETONE
MODEL 2D1430C

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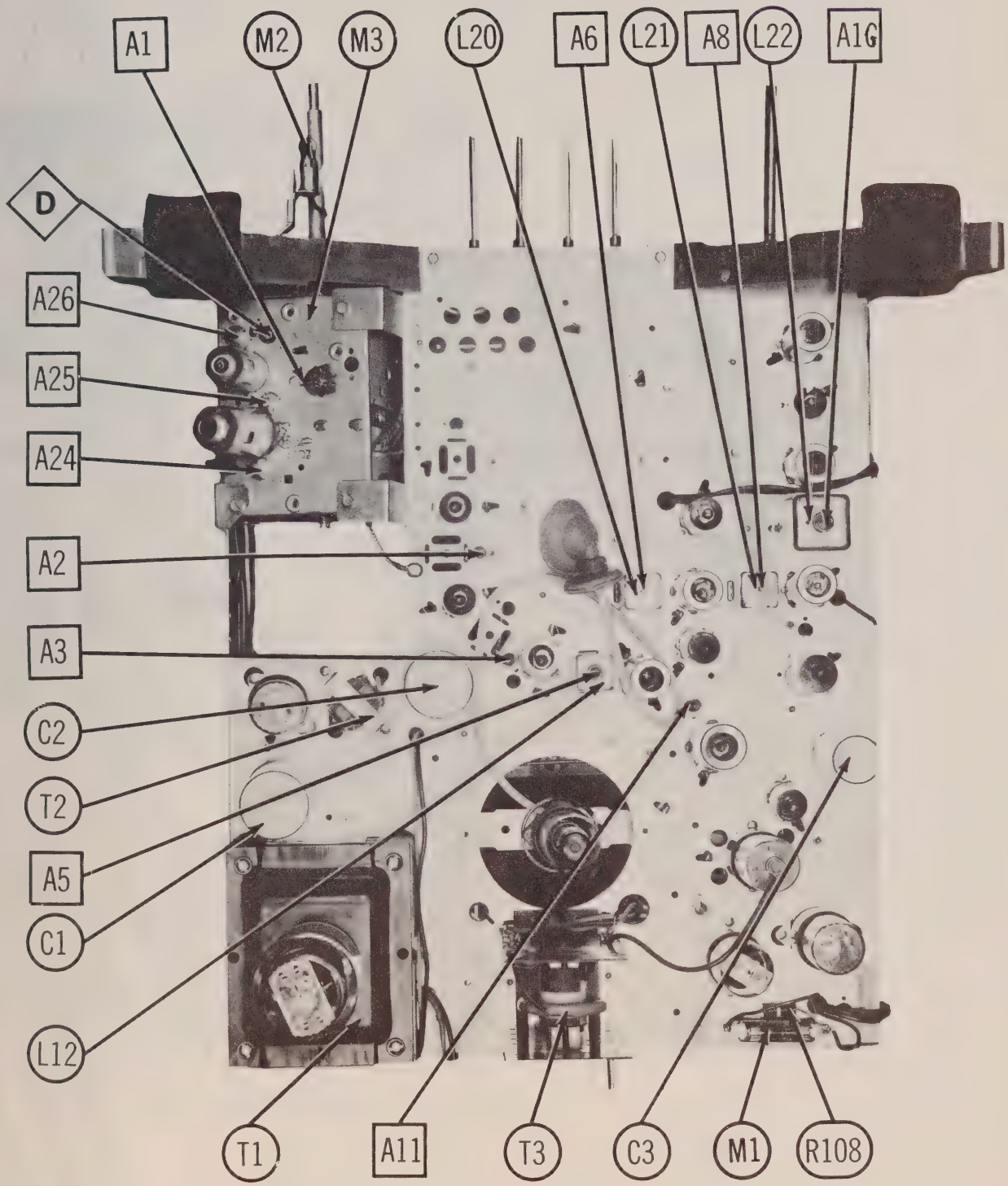
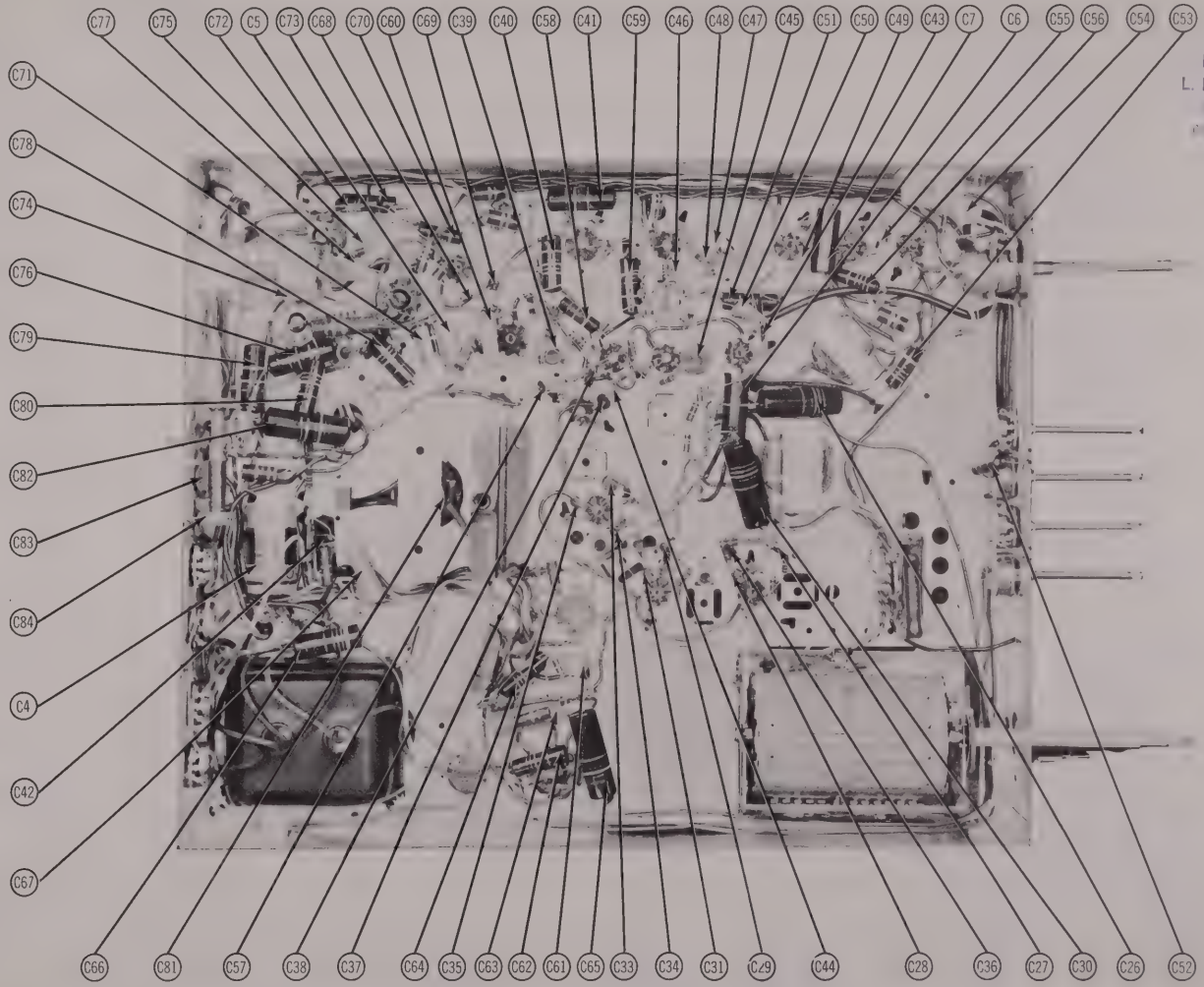
3924 MEADE ST.
DENVER, COLORADO




CHASSIS TOP VIEW

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CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

# TUBE PLACEMENT CHART

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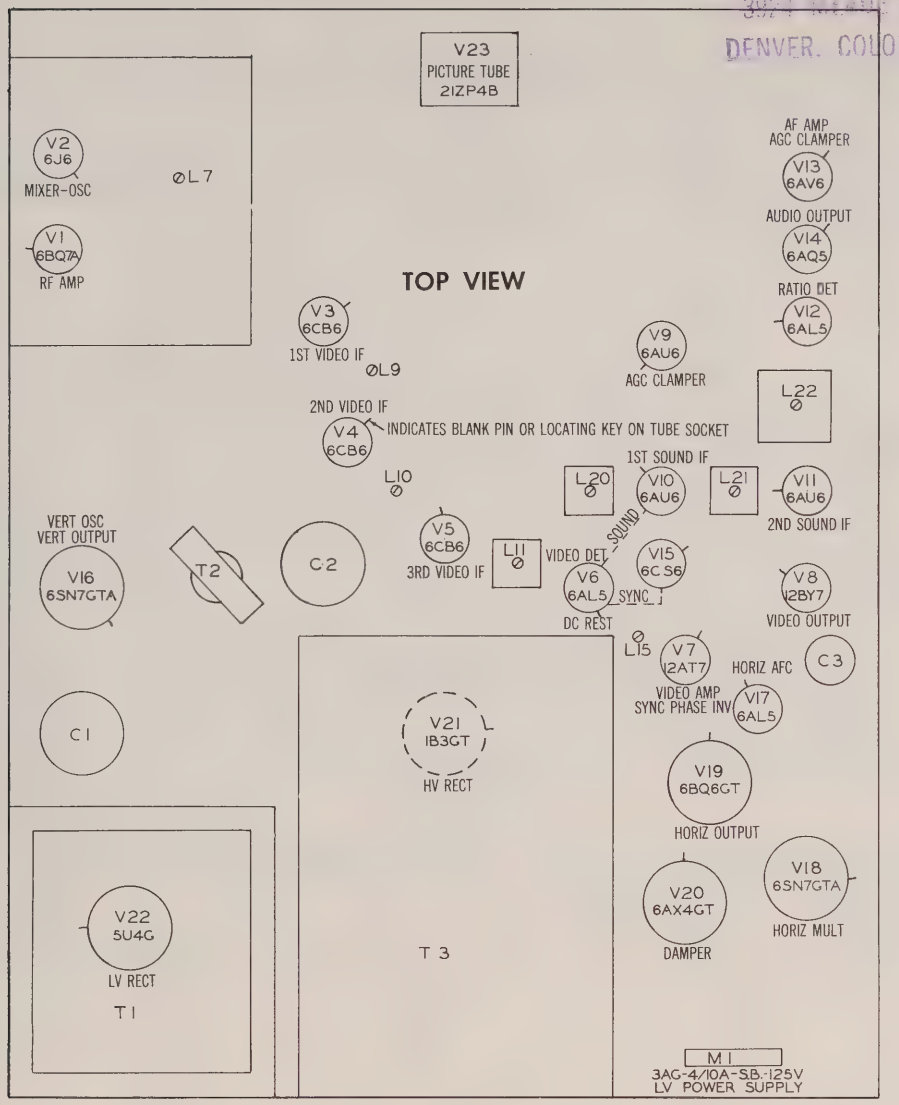


# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V22, Fuse (M1)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V7, V8, V9, V23**
Has pic, no sound - **V10, V11, V12, V13, V14**
Overloaded picture - **V9, V13**

SYNC FAILURE
No vert. sync - **V7, V16**
No horiz. sync - **V7, V17, V18**
No vert. or horiz. sync - **V7, V15**

SWEEP FAILURE
No raster, has sound - **V18, V19, V20, V21, V23**
No vertical deflection - **V16**
Poor vert. linearity or foldover - **V16**
Poor horiz. linearity or foldover - **V18, V19, V20**
Narrow picture - **V18, V19, V20, V21, V22**
Vert. off freq. - **V7, V16**
Horiz. off freq. - **V7, V17, V18**

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube (V18) to disable the high voltage.

## VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias battery to the ungrounded side of C30. Connect the positive lead to chassis.
Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.
This will disable the local oscillator and reduce the possibility of erroneous indications.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 25.25MC (Unmod) | Any | DC probe thru filter (Fig. 1) to point Ⓐ. Common to chassis. | A1 | Attenuate generator output to maintain not more than 2 volts at VTVM. Adjust for maximum deflection. |
| 2. | " | " | 23.1MC | " | " | A2 | " |
| 3. | " | " | 25.9MC | " | " | A3 | " |
| 4. | " | " | 24.1MC | " | " | A4 | " |
| 5. | " | " | 21.7MC | " | " | A5 | Adjust for MINIMUM deflection. |

## OVERALL VIDEO IF RESPONSE CHECK

Leave bias battery connected as under "Video IF Alignment".
Use only enough sweep generator output to provide usable indication on scope.
Connect a .005MFD capacitor across the vertical input terminals of scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 6. | Direct | High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis. | 24MC (10MC Swp) | 21.7MC<br>23.0MC<br>23.5MC<br>25.25MC<br>26.2MC | Any | Vert. Amp. thru 22KΩ to point Ⓐ. Low side to chassis. | | Check for response curve similar to Fig. 2. If necessary, SLIGHTLY retouch A1 thru A4 to obtain desired response. |

## SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a signal generator providing 4.5MC signal of crystal accuracy is not available restore the set to normal operating condition and tune in a local TV station. Connect the VTVM and adjust A6 thru A10 as in steps 7 and 8.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 7. | .01MFD | High side to point Ⓐ. Low side to chassis. | 4.5MC (Unmod) | Any | DC probe to point Ⓑ. Common to chassis. | A6, A7, A8, A9 | Adjust for maximum deflection. |
| 8. | " | " | " | " | DC probe to point Ⓒ. Common to chassis. | A10 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

## SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 7. | .01MFD | High side to point Ⓐ. Low side to chassis. | 4.5MC (450KC Swp) | 4.5MC | Any | Vert. Amp. to point Ⓑ. Low side to chassis. | A6, A7, A8, A9 | Disconnect stabilizing capacitor C7. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3. |
| 8. | " | " | " | " | " | Vert. Amp. to point Ⓒ. Low side to chassis. | A10 | Reconnect stabilizing capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines. |

## 4.5MC TRAP ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | CHANNEL | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 9. | .01MFD | High side to point Ⓐ. Low side to chassis. | 4.5MC (Unmod) | Any | DC probe thru detector (Fig. 5) to pin 2 (grid) of picture tube. | A11 | Adjust for MINIMUM deflection. |

## ALTERNATE 4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust A11 for minimum 4.5MC. beat interference in picture.

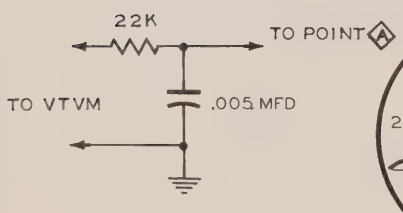

FIG. 1

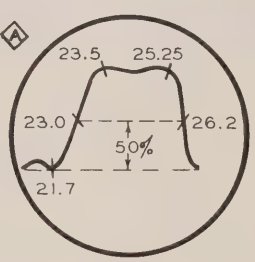

FIG. 2

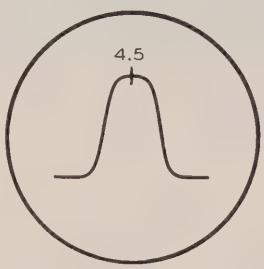

FIG. 3

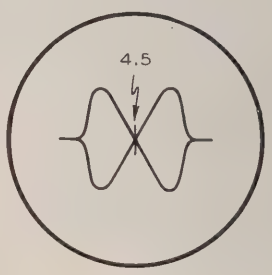

FIG. 4

# ALIGNMENT INSTRUCTIONS (cont)

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## OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Leave the bias battery connected as under "Video IF Alignment".
The channel oscillator adjustment screws are reached thru a hole just to the right of the channel switch shaft. The correct oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid- position of its range.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 10. | Two 120Ω Carbon Resistors | Across antenna terminals with 120Ω in each lead. | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | Vert. Amp. thru 22KΩ to point Ⓐ. Low side to chassis. | A12 | Adjust to place sound marker in trap notch as in Fig. 6. Video marker should be at 50%. |
| | | | 207MC (10MC Swp) | 205.25MC 209.75MC | 12 | | A13 | |
| | | | 201MC (10MC Swp) | 199.25MC 203.75MC | 11 | | A14 | |
| | | | 195MC (10MC Swp) | 193.25MC 197.75MC | 10 | | A15 | |
| | | | 189MC (10MC Swp) | 187.25MC 191.75MC | 9 | | A16 | |
| | | | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | | A17 | |
| | | | 177MC (10MC Swp) | 175.25MC 179.75MC | 7 | | A18 | |
| | | | 85MC (10MC Swp) | 83.25MC 87.75MC | 6 | | A19 | |
| | | | 79MC (10MC Swp) | 77.25MC 81.75MC | 5 | | A20 | |
| | | | 69MC (10MC Swp) | 67.25MC 71.75MC | 4 | | A21 | |
| | | | 63MC (10MC Swp) | 61.25MC 65.75MC | 3 | | A22 | |
| | | | 57MC (10MC Swp) | 55.25MC 59.75MC | 2 | | A23 | |

## RF AND MIXER ALIGNMENT

Remove the 4.5 volt bias battery from C30.
Connect the negative side of a 1.5 volt bias battery to the ungrounded side of C26.
Connect the positive side to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 11. | Two 120Ω Carbon Resistors | Across antenna terminals with 120Ω in each lead. | 207MC (10MC Swp) | 205.25MC 209.75MC | 12 | Vert. Amp. thru 22KΩ to point Ⓓ. Low side to chassis. | A24, A25, A26 | Adjust for response similar to Fig. 7 with markers above 90%. |
| 12. | " | " | 213MC (10MC Swp) | 211.25MC 215.75MC | 13 | " | | Check for response similar to Fig. 7. If markers fall below 70% on any channel make compromise adjustments of A24, A25 and A26 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected. |
| | | | 201MC (10MC Swp) | 199.25MC 203.75MC | 11 | | | |
| | | | 195MC (10MC Swp) | 193.25MC 197.75MC | 10 | | | |
| | | | 189MC (10MC Swp) | 187.25MC 191.75MC | 9 | | | |
| | | | 183MC (10MC Swp) | 181.25MC 185.75MC | 8 | | | |
| | | | 177MC (10MC Swp) | 175.25MC 179.75MC | 7 | | | |
| | | | 85MC (10MC Swp) | 83.25MC 87.75MC | 6 | | | |
| | | | 79MC (10MC Swp) | 77.25MC 81.75MC | 5 | | | |
| | | | 69MC (10MC Swp) | 67.25MC 71.75MC | 4 | | | |
| | | | 63MC (10MC Swp) | 61.25MC 65.75MC | 3 | | | |
| | | | 57MC (10MC Swp) | 55.25MC 59.75MC | 2 | | | |

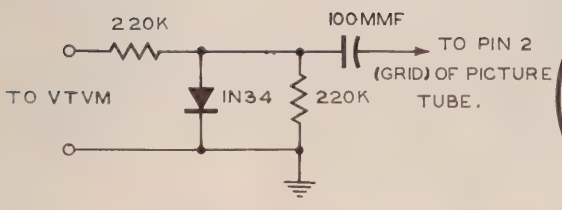



FIG.5

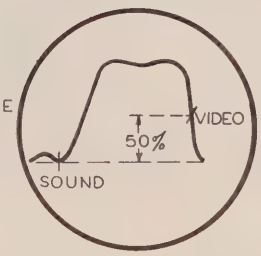


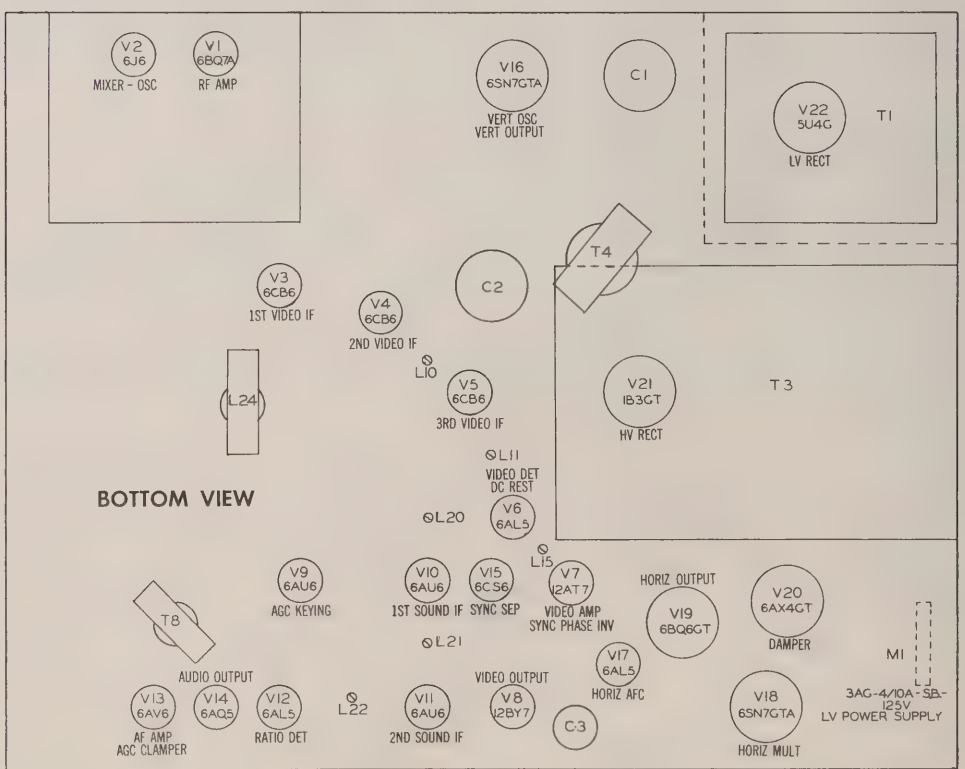

FIG.6

FIG.7

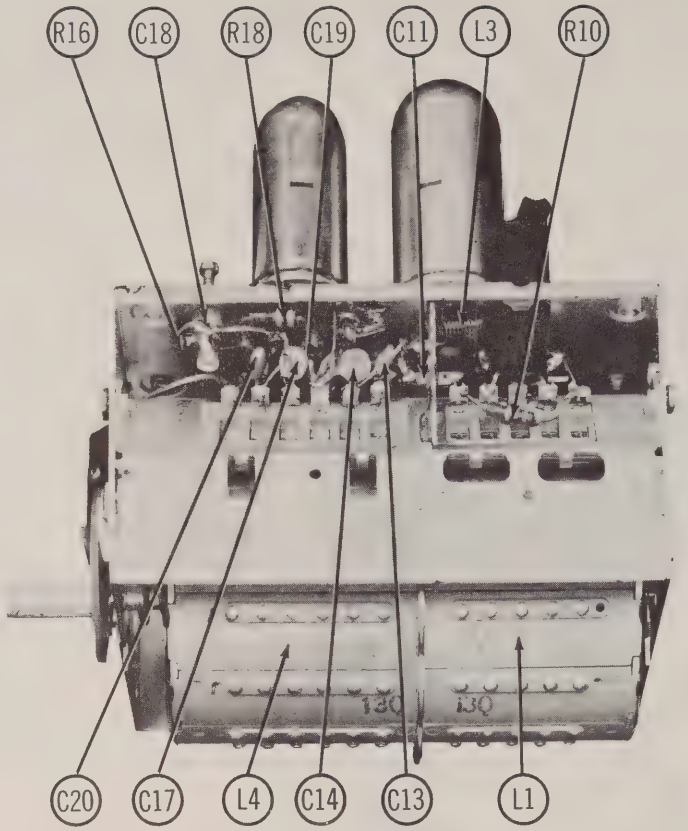
# RESISTANCE MEASUREMENTS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V 1 | 6BQ7A | INF | 800KΩ | 0Ω | .1Ω | 0Ω | †1.9KΩ | 160KΩ | INF | 0Ω |
| V 2 | 6J6 | †17KΩ | †2.4KΩ | .1Ω | 0Ω | 230KΩ | 10KΩ | 0Ω | | |
| V 3 | 6CB6 | 108KΩ | 47Ω | 0Ω | .1Ω | †3.4KΩ | †3.4KΩ | 0Ω | | |
| V 4 | 6CB6 | 101KΩ | 47Ω | 0Ω | .1Ω | †3.4KΩ | †3.4KΩ | 0Ω | | |
| V 5 | 6CB6 | .3Ω | 180Ω | 0Ω | .1Ω | †3.4KΩ | †3.4KΩ | 0Ω | | |
| V 6 | 6AL5 | 1Meg | 4.7KΩ | 0Ω | .1Ω | .2Ω | 0Ω | 0Ω | | |
| V 7 | 12AT7 | †9.5KΩ | 4.7KΩ | .3Ω | 0Ω | 0Ω | †5.7KΩ | †820KΩ | 3.3KΩ | .1Ω |
| V 8 | 12BY7 | 600Ω | 1Meg | 0Ω | .1Ω | .1Ω | 0Ω | †4.4KΩ | †2.4KΩ | 0Ω |
| V 9 | 6AU6 | †37KΩ | †2.4KΩ | 0Ω | .1Ω | 450KΩ | †370Ω | †2.4KΩ | | |
| V 10 | 6AU6 | 2.4Ω | 0Ω | .1Ω | 0Ω | †3.4KΩ | †3.4KΩ | 100Ω | | |
| V 11 | 6AU6 | 56KΩ | 0Ω | .1Ω | 0Ω | †3.4KΩ | †25KΩ | 0Ω | | |
| V 12 | 6AL5 | INF | INF | .1Ω | 0Ω | 10KΩ | 0Ω | 10KΩ | | |
| V 13 | 6AV6 | 10Meg | 0Ω | .1Ω | 0Ω | 800KΩ | 800KΩ | †470KΩ | | |
| V 14 | 6AQ5 | 470KΩ | 330Ω | 0Ω | .1Ω | †1.9KΩ | †1.4KΩ | 470KΩ | | |
| V 15 | 6CS6 | 60KΩ | 0Ω | .1Ω | 0Ω | †1Meg | †100KΩ | 1.5Meg | | |
| V 16 | 6SN7GTA | 5Meg | ■2.5Meg | 190Ω | 2.2Meg | ■10KΩ | 1.8KΩ | 0Ω | .1Ω | |
| V 17 | 6AL5 | 4.8Meg | 4.8Meg | .1Ω | 0Ω | 10KΩ | INF | 10KΩ | | |
| V 18 | 6SN7GTA | 5.2Meg | †4.8KΩ | 1.5KΩ | 180KΩ | †250KΩ | 1.5KΩ | .1Ω | 0Ω | |
| V 19 | 6BQ6GT | 6.8KΩ | 0Ω | 470KΩ | †17KΩ | 470KΩ | 8.2KΩ | .1Ω | 100Ω | TOP CAP ■15Ω |
| V 20 | 6AX4GT | †40Ω | INF | 150KΩ | †47KΩ | †60Ω | INF | .1Ω | 0Ω | |
| V 21 | 1B3GT | | PINS | 1 - 8 | HAVE | INF | RESISTANCE | | | TOP CAP ■435Ω |
| V 22 | 5U4G | INF | 40KΩ | INF | 20Ω | INF | 22Ω | INF | 40KΩ | |
| V 23 | 21ZP4B | 0Ω | 1.1Meg | PIN 10 ■6.8KΩ | PIN 11 †320KΩ | PIN 12 .1Ω | | | | |

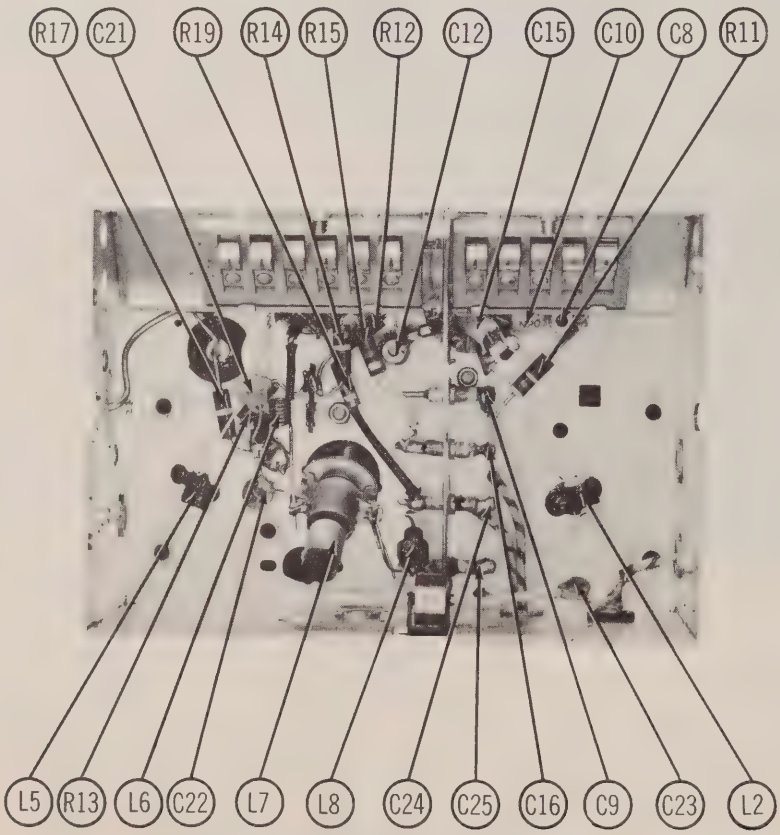
† MEASURED FROM PIN 2 OF V22
■ MEASURED FROM PIN 3 OF V20




# TUBE PLACEMENT CHART




**RF TUNER-RIGHT SIDE**




**RF TUNER-BOTTOM VIEW**

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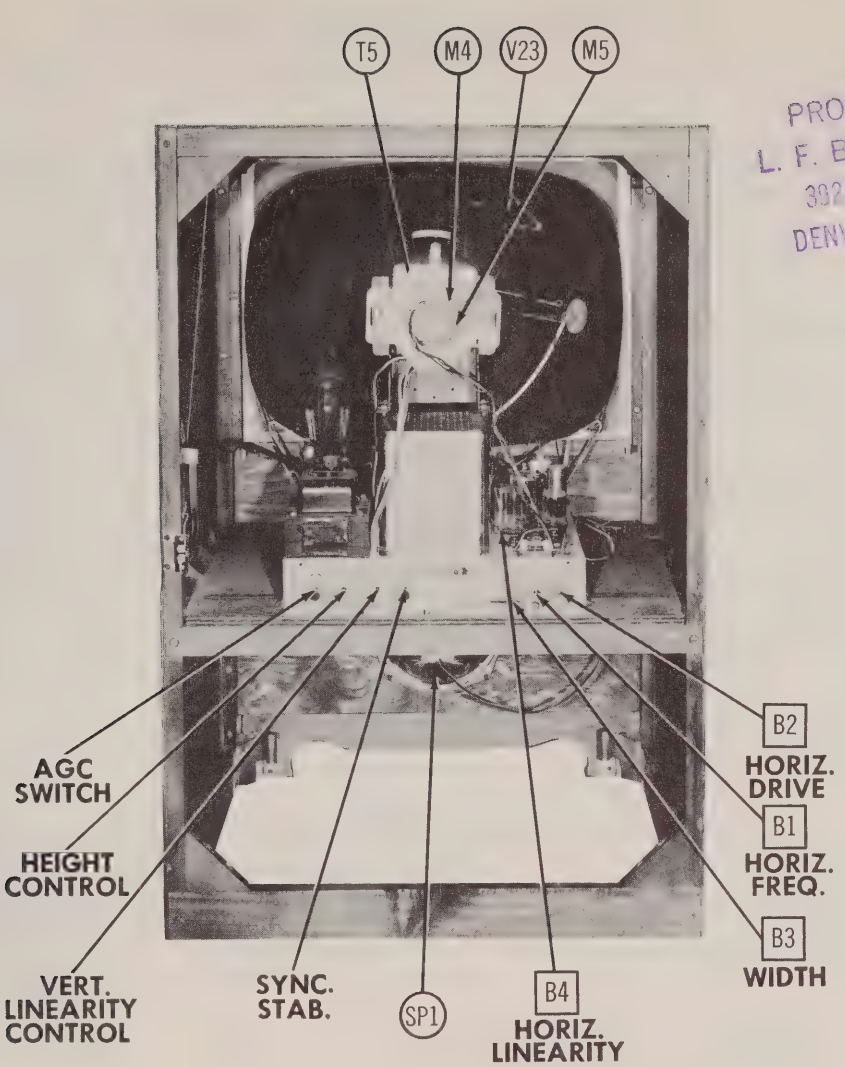



## CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally. Switch off channel and back again. The picture should pull into sync and remain in sync thru 90 degree rotation of horizontal hold control.

Turn the contrast control maximum counter clockwise and adjust the brightness control for a washed out picture.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without the presence of a vertical white line near the center of the raster.

Adjust the width coil (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity coil (B4) for a picture that is symmetrical from left to right.

Recheck setting of B2 then repeat horizontal oscillator adjustment (B1) as above.

# TROUBLE SHOOTING AIDS

## SWEEP

### HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check adjustments B2, B3 and B4. Check by substitution V19, V20 and V22. Check T3, T5A, T7, R101, R102 and other associated components.

DRIVE LINES

Check adjustment B2. Check substitution V19 and V20. Check T3, T5A, T6, C5, R100, R101, R102 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V19 and V20. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V18, V19 and V20. Check C73 for open. Check R91, L23, C74 and other associated components.

XMAS TREE EFFECT

Check by substitution V18, V19 and V20. Check T3 and T5A for internal arcing. Check L23, C74, C75, R92, R94, R91 and other associated components.

### VERTICAL

LOSS OF SWEEP

Check by substitution V16. Check waveform W11.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T4, T5B, R8, R78, R79, C2B and other associated components. | Check T2, C65, C61, R76, R75 and other associated components. |

INSUFFICIENT SWEEP

Check by substitution V16. Check height and vertical linearity controls for proper operation. Check T4 and T5B.

COMPRESSED AT BOTTOM

Substitute V16. Check R7, R76, C63 and other associated components.

COMPRESSED AT TOP

Substitute V16. Check R8, R78, C2B, C65 and other associated components.

FOLDS

Substitute V16. Check C63, R80, R78 and other associated components.

## SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V15 and V7. Check R68, R66, R69, R71, C58, C59, C57 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V16. Check waveform W9.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T2, C61, C62, R75, R74, R5 and other associated components. | Check vertical integrator network for component failure or change of value. Check video IF alignment for overloading. |

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V17 and V18. Check horizontal AFC network. Check C68, C69, C74, L23, R92, R93, R2 and other associated components.

HORIZONTAL BENDING

Check by substitution V7, V15, V17 and V18. Check horizontal AFC network.

## VIDEO

LOSS OF VIDEO

Check by substitution V7 and V8. Check C40, C41, R31, R35, R36, L19, L18, L16, L17 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A11. Check video IF alignment.

POOR CONTRAST

Check by substitution V7 and V8. Check contrast control, picture tube, L18, R35 and R36. Check video detector network.

NEGATIVE PICTURE

Check by substitution V7 and V8. Check video detector network. Check C41, picture tube and contrast control.

SMEAR

Check by substitution V7 and V8. Check L13, L14, L16, L17, L18, C41 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6, V7 and V8 for heater to cathode leakage.

## AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12, V13 and V14. Check stages of V13 and V14 using audio signal generator. Apply audio signal across R1B.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check ratio detector and audio IF stages for component failure or change of value. | Check C54, C55A, C56, R63, R61A, R62, T8, speaker and other associated components. |

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A10. If still unsatisfactory, check audio IF alignment and C7.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
L. F. BLANKENSHIP
3924 MIRADO ST.
DENVER, COLORADO

| ITEM No. | USE | REPLACEMENT DATA: TRUETONE PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | RF Amplifier | 6BQ7A | 6BQ7A | 9AJ | 6BQ7 or 6BZ7 used in some versions |
| V2 | Mixer - Osc. | 6J6 | 6J6 | 7BF | |
| V3 | 1st. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V4 | 2nd. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V5 | 3rd. Video IF Amp. | 6CB6 | 6CB6 | 7CM | |
| V6 | Video Detector-DC Restorer | 6AL5 | 6AL5 | 6BT | |
| V7 | Video Amp.-Sync Phase Inv. | 12AT7 | 12AT7 | 9A | |
| V8 | Video Output | 12BY7 | 12BY7 | 9BF | |
| V9 | AGC Keying | 6AU6 | 6AU6 | 7BK | |
| V10 | 1st. Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V11 | 2nd. Sound IF Amp. | 6AU6 | 6AU6 | 7BK | |
| V12 | Ratio Det. | 6AL5 | 6AL5 | 6BT | |
| V13 | AF Amp-AGC Clamper | 6AV6 | 6AV6 | 7BT | |
| V14 | Audio Output | 6AQ5 | 6AQ5 | 7BZ | |
| V15 | Sync Separator | 6CS6 | 6CS6 | 7CH | |
| V16 | Vert. Osc.-Vert. Output | 6SN7GTA | 6SN7GTA | 8BD | |
| V17 | Horiz. AFC | 6AL5 | 6AL5 | 6BT | |
| V18 | Horiz. Mult. | 6SN7GTA | 6SN7GTA | 8BD | |
| V19 | Horiz. Output | 6BQ6GT | 6BQ6GT | 6AM | |
| V20 | Damper | 6AX4GT | 6AX4GT | 4CG | |
| V21 | HV Rectifier | 1B3GT | 1B3GT | 3C | |
| V22 | LV Rectifier | 5U4G | 5U4G | 5T | |

## CATHODE-RAY TUBE

| ITEM No. | REPLACEMENT DATA: TRUETONE PART No. | CBS-HYTRON PART No. | GENERAL ELECTRIC PART No. | SYLVANIA PART No. | WESTINGHOUSE PART No. | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|---|---|
| V23 | 21ZP4B | 21ZP4B<br>21ZP4A | 21ZP4B<br>21ZP4A | 21ZP4B<br>21ZP4A<br>21ZP4 ① | 21ZP4B<br>21ZP4A | 12N<br>12N | ① Circuit changes necessary |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: TRUETONE PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | ▬80 | 400 | 45X390 | AFH3-46 | | B081 | | FP229.4 | TVL-3720 | |
| B | ▲60 | 400 | | | | | | | | |
| C2A | ▬80 | 400 | 45X391 | AFH3-142 | | C109 | | FP229.8 | TVL-3757 | |
| B | ▲100 | 50 | | | | | | | | |
| C3A | ■20 | 400 | 45X392 | AFH3-137 | | C097 | | FP366 | TVL-3751 | |
| B | ▲10 | 400 | | | | | | | | |
| C | 40 | 50 | | | | | | | | |
| C4 | 30 | 400 | 45X393 | PRS450/30 | | BR3045 | | TC77 | TVA-1711 | |
| C5 | 5 | 25 | 45X378 | PRS150/4 | | BR550 | | TC30 | TVA-1203 | |
| C6 | 4 | 100 | 45X361 | PRS150/4 | | BR415 | | TC40 | TVA-1402 | |
| C7 | 5 | 25 | 45X378 | PRS150/4 | | BR550 | | TC30 | TVA-1203 | |
| C8 | 3-9 | | 31B-207 | | 829-10 | | | | | |
| C9 | 800 | | 13D-153 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C10 | 3.6 | | CD8C3R6C | SI3.3NP0 | TCZ-3.3 | Z008 | NP0K-3R3 | ZT-5533 | 5TCCB-V33 | |
| C11 | 800 | | 13D-196 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C12 | .5-3 | | 31B-206 | | 829-3 | | 311S-01-0R5 | CT565A | | |
| C13 | 1.5 | | CD8CIR5N | SI1.5NP0 | TCZ-1.5 | Z004 | NP0K-1R5 | ZT-5515 | 5TCCB-V15 | |
| C14 | 47 | | CD8Q470K | BPD-000047 | D6-470 | G033 | 801-470 | UC-5447 | 5GA-Q47 | |
| C15 | 1000 | | CD8X102Z | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C16 | 800 | | 13D-153 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C17 | 47 | | CD8Q470K | BPD-000047 | D6-470 | G033 | 801-470 | UC-5447 | 5GA-Q47 | |
| C18 | .5-3 | | 31B-206 | | 829-3 | | 311S-01-0R5 | CT565A | | |
| C19 | 10 | | CD10C100K | SI10NP0 | TCZ-10 | Z018 | NP0K-100 | ZT-541 | 5TCC-Q1 | |
| C20 | 5 | | CD8U050C | | | | | | | |
| C21 | 1000 | | CD8X102Z | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C22 | 6.8 | | CD8C6R8C | SI6.8NP0 | TCZ-6.8 | Z013 | NP0K-6R8 | ZT-5568 | 5TCCB-V68 | |
| C23 | 120 | | 13D-055 | BPD-00012 | D6-121 | G044 | 801-121 | UC-5312 | 5GA-T12 | |
| C24 | 800 | | 13D-153 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C25 | 800 | | 13D-153 | EF-001 | MFT-1000 | | | | 503C-D1 | |
| C26 | .22 | 200 | RCP10M2224M | P288-22 | | CUB2P22 | | PT4022 | 2TM-P22 | |
| C27 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C28 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C29 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C30 | .22 | 200 | RCP10M2224M | P288-22 | | CUB2P22 | | PT4022 | 2TM-P22 | |
| C31 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C32 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | Note 1 |
| C33 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C34 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C35 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | Note 1 |
| C36 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C37 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C38 | 5 | | 47X562 | SI5NP0 | TCZ-4.7 | TZ07 | NP0K-050 | ZT-555 | 5TCCB-V47 | |
| C39 | 360 | 500 | 47X568 | 1469-361 | | 5R5T36 | | | | |
| C40 | .047 | 400 | RCP10M4473M | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C41 | .1 | 400 | RCP10M4104M | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C42 | .1 | 200 | RCP10M2104M | P288-1 | DF-104 | CUB2P1 | | PT401 | 2TM-P1 | |
| C43 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C44 | 1.5 | | 47X584 | SI1.5NP0 | TCZ-1.5 | TZ04 | NP0K-1R5 | ZT-5515 | 5TCCB-V15 | |
| C45A | 10000 | | 80X6 | BPD-2X01 | DD3-103 | DK082 | 811-01 | DCD-511 | 5HK-2S1 | |
| B | 10000 | | | | | | 811-01 | | | |
| C46 | 100 | | 47X604 | SI100 | D6-101 | TP34 | GP1K-101 | UC-531 | 5GA-T1 | |
| C47 | 5000 | | 47X507 | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C48 | 5000 | | 47X507 | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |
| C49 | 330 | 500 | 47X570 | 1468-331 | D6-331 | 5W5T33 | GP2K-331 | | 5GA-T33 | |
| C50 | 470 | 500 | 47X525 | 1468-471 | D6-471 | 5W5T47 | GP2K-471 | MC245 | 1FM-35 | |
| C51 | .047 | 200 | RCP10M2473M | P288-047 | DF-503 | CUB2S47 | | PT4147 | 2TM-S47 | |
| C52 | .0047 | 400 | RCP10M4472M | P688-0047 | D6-472 | CUB6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C53 | .0047 | 400 | RCP10M4472M | P688-0047 | D6-472 | CUB6D47 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C54 | 5000 | | 47X507 | BPD-005 | DD-502 | K080 | 811-005 | DC-525 | 5HK-D5 | |

PROPERTY OF
L. F. [illegible] SHIP
3-24 [illegible]
DENVER, COLORADO

# PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS (cont)

| ITEM No. | RATING CAP | RATING VOLT | TRUETONE Part No. | AEROVOX Part No. | CENTRALAB Part No. | CORNELL-DUBILIER Part No. | ERIE Part No. | MALLORY Part No. | SPRAGUE Part No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C58A | .01 | | | | | | | | | |
| B | 250 | | 176X5 | TPA-12-3 | TPC-80 | 1153TM1 | 11404-01 | | 1T-1 | |
| C | .5 | | | | | | | | | |
| C58 | .0047 | 600 | RCP10M6472M | P588-0047 | D6-472 | CUBD54T7 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C57 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C58 | 01 | 400 | RCP10M1033M | P489-01 | D5-103 | CUB4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C59 | .047 | 400 | RCP10M4473M | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C60A | .002 | | | | | | | PT623 | | |
| B | .003 | | 176X1 | APA-1U | APC-100 | 415TM1 | 41405-01 | PT625 | 4V-1 | |
| C | .005 | | | | | | | PT625 | | |
| C61 | 4700 | 500 | 47X543 | 1464-472 | | 1RSD47 | | MC6485 | MS-35 | |
| C62 | .022 | 200 | RCP10M2223M | P288-022 | DF-203 | CUBS22 | 817-02 | PT4122 | 2TM-S22 | |
| C63 | .047 | 600 | RCP10M6473M | P588-047 | DF-503 | CUBS47 | | PT6147 | 6TM-S47 | |
| C64 | .022 | 200 | RCP10M2223M | P288-022 | DF-203 | CUBS22 | 817-02 | PT4122 | 2TM-S22 | |
| C65 | .1 | 600 | RCP10M6104M | P588-1 | DF-104 | CUB6P1 | | PT6101 | 6TM-P1 | |
| C66 | .047 | 600 | RCP10M6473M | P588-047 | DF-503 | CUB6S47 | | PT6147 | 6TM-S47 | |
| C67 | .015 | 600 | RCP10M6153M | P588-015 | | CUBS15 | | PT6115 | 6TM-S15 | |
| C68 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C69 | 1000 | | 80X1 | BPD-001 | DD-102 | K069 | 801-001 | DC-521 | 5HK-D1 | |
| C70 | .01 | 400 | RCP10M1033M | P489-01 | D5-103 | CU4S1 | GP2-333-103 | PT411 | 4TM-S1 | |
| C71 | 270 | 500 | RCM20A271K | 1469-271 | | 2SHS27 | | MC8241 | MS-33 | |
| C72 | .0047 | 400 | RCP10M4472M | P488-0047 | D6-472 | CUBD54T7 | GP2-333-472 | PT6247 | 6TM-D47 | |
| C73 | .047 | 200 | RCP10M2473M | P288-047 | DF-503 | CUBS47 | | PT4147 | 2TM-S47 | |
| C74 | 4700 | 500 | 47X543 | 1464-472 | | 1RSD47 | | MC6485 | MS-35 | |
| C75 | 390 | 500 | 47X398 | 1469-361 | | 5HS39 | | | | |
| C76 | .1 | 400 | RCP10M4104M | P488-1 | DF-104 | CUB4P1 | | PT401 | 4TM-P1 | |
| C77 | 330 | 500 | 47X570 | 1469-331 | | 5RS33 | | | | |
| C78 | .047 | 400 | RCP10M4473M | P488-047 | DF-503 | CUB4S47 | | PT4147 | 4TM-S47 | |
| C79 | .1 | 400 | RCP10M4104M | P488-1 | | CUB4P1 | | PT401 | 4TM-P1 | |
| C80 | .047 | 400 | RCP10M4473M | P488-047 | | CUB4S47 | | PT4147 | 4TM-S47 | |
| C81 | 500 | 20000 | 47X560 | HV20K | TV3-502 | HV20DT3 | 413 | HV30035A | 20QK-75 | |
| C82 | .15 | 400 | RCP10M4154M | P488-15 | | CUB4P15 | | PT4015 | 4TM-P15 | |
| C83 | 1000 | | 47X615 | BPD-01 | DD-103 | K082 | 811-01 | DC-531 | 5HK-S15 | |
| C84 | 10000 | | 47X615 | BPD-01 | DD-103 | K082 | 811-01 | DC-531 | 5HK-S15 | |

Note 1, Not used in all versions.
† Items C58A, C58B, C59C, R61A, R61B are combined in one unit.
When replacing items separately C58B and C59C should total 250MMF.
♦ Items C60A, C60B, C60C, R72A, R72B, R72C are combined in one unit.

## CONTROLS

| ITEM No. | RATING RESIST-ANCE | RATING WATTS | TRUETONE Part No. | IRC Part No. | CLAROSTAT Part No. | CENTRALAB Part No. | MALLORY Part No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 10000 | | B76X19 | *QJ-501 | | F1-2 | | Contrast - Panel |
| B | 1Meg | | | | | R2-57 | | Volume - tapped ⑨300KΩ-Rear |
| C | Switch | | | | | KB-2 | | Attach to R1B |
| R2A | 50KΩ | ½ | B40X361-C | QU-123 | A47-50K-S | AB-31 | U-35 | Horiz. Hold |
| B | Shaft | | Not Req. | BQ | RS-3.16 | AK-4 | DB-37 | Attach to R2A |
| R3A | 1Meg | ½ | B40X394-E | QU-138 | A47-1.5Meg-S | AB-69 | U-155 | Tone |
| B | Shaft | | Not Req. | BQ | KSS-3 | AK-4 | Not Req. | Attach to R3A |
| R4A | 500KΩ | 1 | B40X331-A | QU-133 | A47-500K-S | AB-59 | U-50 | Brightness |
| B | Shaft | | Not Req. | Not Req. | RS-3.16 | AK-4 | Not Req. | Attach to R4A |
| R5A | 1Meg | ½ | B40X334-E | QU-138 | A47-1.5Meg-S | AB-69 | U-155 | Vert. Hold |
| B | Shaft | | Not Req. | BQ | KSS-3 | AK-4 | Not Req. | Attach to R5A |
| R6A | 2.5Meg | ½ | B40X369A | QU-239 | A47-2.5Meg-S | BX-83 | SU-589 | AGC |
| B | Shaft | | Not Req. | BQ | FKS-1/4 | Not Req. | Not Req. | Attach to R6A |
| R7A | 2.5Meg | ½ | B40X369A | QU-239 | A47-2.5Meg-S | BX-83 | SU-565 | Height |
| B | Shaft | | Not Req. | BQ | FKS-1/4 | Not Req. | Not Req. | Attach to R7A |
| R8A | 800Ω | ½ | B40X375 | QU-118 | A47-100-S | AB-14 | SU-30 | Vert. Linearity |
| B | Shaft | | Not Req. | BQ | FKS-1/4 | AK-1 | Not Req. | Attach to R8A |
| R9A | 7.5Meg | ½ | B40X270A | QU-142 | A47-7.5Meg-S | | | Sync Stability |
| B | Shaft | | Not Req. | BQ | FKS-1/4 | | | Attach to R9A |

* CONCENTRIKIT EQUIVALENT : KIT K-2, BASE ELEMENTS & SHAFTS : B11-108 & P1-310 (Panel)
B1A-137X & R7-322 (Rear)
76-2 SWITCH

## RESISTORS

| ITEM No. | RATING OHMS | RATING WATT | TRUETONE Part No. | IRC Part No. | NOTES |
|---|---|---|---|---|---|
| R10 | 15KΩ | ½ | 12A-004 | BTS-15K | |
| R11 | 47KΩ | ½ | 12A-008 | BTS-47K | |
| R12 | 100KΩ | ½ | 12A-094 | BTS-100K | |
| R13 | 100KΩ | ½ | 12A-087 | BTS-100K | |
| R14 | 100KΩ | ½ | 12A-188 | BTS-100K | |
| R15 | 1500Ω | ½ | 12A-183 | BTS-1500 | |
| R16 | 10KΩ | ½ | 12A-040 | BTS-10K | |
| R17 | 220KΩ | ½ | 12A-041 | BTS-220K | |
| R18 | 10KΩ | ½ | 12A-040 | BTS-10K | |
| R19 | 15KΩ | ½ | | BTS-15K | |
| R20 | 8200Ω | ½ | B83822 | BTS-8200 | |
| R21 | 470 5% | ½ | B83470 | BTS-47 5% | |
| R22 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R23 | 22KΩ | ½ | B83223 | BTS-22K | |
| R24 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R25 | 470 5% | ½ | B83470 | BTS-47 5% | |
| R26 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R27 | 22KΩ | ½ | B83223 | BTS-22K | |
| R28 | 180Ω | ½ | B84181 | BTS-180 | |
| R29 | 1500Ω | ½ | B84183 | BTS-1500 | |
| R30 | 47000 5% | ½ | B83472 | BTA-4700 5% | |
| R31 | 5000Ω | 1 | C84562 | BTA-5600 | |
| R32 | 1500Ω | 1 | B84152 | BTB-1500 | |
| R33 | 1Meg | ½ | B84105 | BTS-1Meg | |
| R34 | 68Ω | ½ | B84680 | BTS-68 | |
| R35 | 2000Ω 5% | 2 | D83202 | BTB-2000 5% | |
| R36 | 2000Ω 5% | 2 | D83202 | BTB-2000 5% | |
| R37 | 1Meg | ½ | B84105 | BTS-1Meg | |
| R38 | 100KΩ | ½ | B84104 | BTS-100K | |
| R39 | 22KΩ 5% | ½ | B84223 | BTA-22K 5% | |
| R40 | 100KΩ | ½ | B85104 | BTS-100K | |
| R41 | 47KΩ | ½ | B85473 | BTS-47K | |
| R42 | 2200Ω | ½ | B84222 | BTA-2200 | |
| R43 | 33KΩ | ½ | B84333 | BTS-33K | |
| R44 | 47KΩ | ½ | B84473 | BTS-47K | |
| R45 | 470KΩ | ½ | B84474 | BTS-470K | |
| R46 | 2.7Meg | ½ | B84275 | BTS-2.7Meg | |
| R47 | 330KΩ | ½ | B83334 | BTA-330K | |
| R48 | 100KΩ | ½ | B84104 | BTS-100K | |
| R49 | 100Ω | ½ | B85101 | BTS-100 | |
| R50 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R51 | 56KΩ | ½ | B84563 | BTS-56K | |
| R52 | 33KΩ | ½ | B84333 | BTS-33K | |
| R53 | 33KΩ | ½ | B84333 | BTS-33K | |
| R54 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R55 | 270Ω | ½ | B84271 | BTS-270 | |
| R56 | 10KΩ | ½ | B83103 | BTS-10K | |
| R57 | 10KΩ | ½ | B83103 | BTS-10K | |
| R58 | 68KΩ | ½ | B84683 | BTS-68K | |
| R59 | 68KΩ | ½ | B84683 | BTS-68K | |
| R60 | 10Meg | ½ | B85106 | BTS-10Meg | |
| R61A | 470KΩ | ½ | 176X5 | BTS-470K | |
| B | 470KΩ | ½ | | BTS-470K | |
| R62 | 33ΩΩ | 1 | C84331 | BTA-330 | |
| R63 | 1000Ω | ½ | B85102 | BTS-1000 | |
| R64 | 47KΩ | ½ | B84473 | BTS-47K | |
| R65 | 270KΩ | ½ | B84274 | BTS-270K | |
| R66 | 68KΩ | ½ | B84683 | BTS-68K | |
| R67 | 1.5Meg | ½ | B84155 | BTS-1.5Meg | |
| R68 | 10KΩ | ½ | B84103 | BTS-10KΩ | |
| R69 | 820KΩ | ½ | B84824 | BTS-820K | |
| R70 | 3300Ω 5% | 1 | B83332 | BTS-3300 5% | |
| R71 | 3300Ω 5% | 1 | B83332 | BTS-3300 5% | |
| R72A | 22KΩ | | | BTS-22K | |
| B | 8200Ω | | 176X7 | BTS-8200 | |
| C | 8200Ω | | | BTS-8200 | |

## RESISTORS (cont)

| ITEM No. | RATING OHMS | RATING WATT | TRUETONE Part No. | IRC Part No. | NOTES |
|---|---|---|---|---|---|
| R73 | 22KΩ 5% | 1 | B84223 | BTA-22k 5% | |
| R74 | 3.3Meg | ½ | B83335 | BTS-3.3Meg | |
| | 5% | | | 5% | |
| R75 | 22KΩ 5% | 1 | B84223 | BTA-22K 5% | |
| R76 | 1.8Meg | ½ | B84185 | BTS-1.8Meg | |
| | 5% | | | 5% | |
| R77 | 2.2Meg | 1 | B84225 | BTS-2.2Meg | |
| R78 | 820Ω | ½ | B84821 | BTS-820 | |
| R79 | 6800Ω | 2 | D84682 | BTS-6800 | |
| R80 | 8200Ω | 2 | D84822 | BTB-8200 | |
| R81 | 2.2Meg | ½ | B84225 | BTS-2.2Meg | |
| R82 | 220KΩ | 2 | B82284 | BTB-220K | |
| R83 | 560Ω | ½ | | BTS-560 | |
| R84 | 100KΩ | ½ | B84104 | BTS-100K | |
| R85 | 6800Ω | 1 | C84682 | BTA-6800 | |
| R86 | 27KΩ | ½ | B84273 | BTS-27K | |
| R87 | 100KΩ | ½ | B84104 | BTS-100K | |
| R88 | 4.7Meg | ½ | B85475 | BTS-4.7Meg | |
| R89 | 470KΩ | ½ | B85474 | BTS-470K | |
| R90 | 6800Ω | 1 | C84682 | BTA-6800 | |

† Items R61A, R61B, C55A, C55B, C55C are combined in one unit.
♦ Items R72A, R72B, R72C, C60A, C60B, C60C are combined in one unit.
Note 1. Some versions may use a 1800Ω resistor in this application.
Note 2. Some versions may use a 5600Ω resistor in this application.
Note 3. Some versions may use a 220KΩ resistor in this application.
Note 4. Not used in all versions.
Note 5. Some versions may use a 5600Ω resistor in this application.

## TRANSFORMER (POWER)

| ITEM No. | RATING | TRUETONE Part No. | Stancor Part No. | Merit Part No. | Triad Part No. | RCA TYPE No. | Halldorson Part No. | Thordarson Part No. |
|---|---|---|---|---|---|---|---|---|
| | PRI SEC 1 SEC 2 | | | | | | | |
| T1 | 117VAC ①1.7A | 500VCT 250VADC | 5VAC ⑨3A | 53X339A | P-8337 ② | R-49B8① | 9715 ⑤ | |
| | SEC 3 SEC 4 SEC 5 | | | | | | | |
| | 6.3VAC ⑨9.6A | | | | | | | |

① Parallel and phase 6.3V ⑨ 9A and 1.2A windings for Sec. #3.
② Drill new mounting holes . Tape extra 6.3V winding.
③ Tape extra winding on high voltage Sec., also extra 6.3V winding.

## TRANSFORMERS (SWEEP CIRCUITS)

| ITEM No. | USE | TRUETONE Part No. | Stancor Part No. | Merit Part No. | Triad Part No. | RCA TYPE No. | Halldorson Part No. | Thordarson Part No. |
|---|---|---|---|---|---|---|---|---|
| T2 | Vert. Osc. Trans. | 54X10 | A-8125 | A-3003 | A-97X | 209T1 ⑦ | B6702 | 34A87 ① |
| T3 | Horiz. Output Trans. | 53X350 | A-8137 & A-8138 ⑤ | HVO-9 & HVO-9A ⑤ | D-19 & D-19A ⑤ | 232T1 & 232T2 ⑤ | FB41 & FB41A ⑤ | FLY-14 & FLY-14A ⑤ |
| | | | WC-5 ⑤ | MWC-1⑦ | WC-11 ⑤ | 212R1 ⑦ | RF800 ④ | WC-20⑤④ |
| T4 | Vert. Output Trans. | 51X168 | A-8141⑤ | A-3028⑤ | A-104X⑤ | 228T1 ⑤ | 21808 ⑤ | 26854 ⑤ |
| T5A | Yoke-Horiz.(53MH) | 9A2334-1 | DY-9 ⑤ | MDF-73 ⑤ | Y-1T ⑤ | 209D1 ⑤ | DF603 ⑤ | Y-4 ⑤ |
| B | Vert.(46MH) | | | | | | | |
| T6 | Horiz. Linearity (1.2-6.8MH) | 9A2282 | WC-8 | MWC-8⑤ | WC-12 ⑤ | 212R1 | RF800④⑤ | WC-18 ④ |
| T7 | Width (1.5-6MH) | 9A2283 | WC-4⑤ | | WC-13 | 202R4 ⑦ | | WC-18 ⑤ |

① Drill one new mounting hole.
② Drill new mounting holes.
③ Use original yoke network and connect as in original circuit.
④ Enlarge mounting hole.
⑤ Connect to coded blue and red terminals.
⑥ Connect to coded #3 and #4 terminals.
⑦ Use original slider and core.

## *HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

| ORIGINAL TERMINAL CONNECTIONS | Stancor Replacement Connections | Merit Replacement Connections | Triad Replacement Connections | RCA Replacement Connections | Halldorson Replacement Connections | Thordarson Replacement Connections |
|---|---|---|---|---|---|---|
| 6 | 7 | 9 | 9 | 10 | 9 | 9 |
| 5 | 4 | 7 | 8&7 | 9 | 7 | 8&7 |
| 4 | T | 5 | 5 | 7 | 5 | 5 |
| 3 | Note ③ | Note 10 | Note 10 | Note 11 | Note 10 | Note 10 |
| 2 | 3 | 3 | T | N. C. | 3 | 3 |
| 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| A | WC-5 (orange term.) | MWC-1 (orange term.) | WC-11 (orange term.) | 2 | RF800 (#3 term.) | WC-20 (#1 term.) |
| G | WC-5 (black term.) | MWC-1 (black term.) | WC-11 (black term.) | 1 | RF800 ( #4 term. ) | WC-20 ( #2 term.) |
| Connect Width Coil Across → | WC-5 (blue & red term.) 2 & 1 | MWC-1 (blue & red term.) 3 & 1 | WC-11 (blue & red term.) T & 1 | 212R1 2 & 1 | RF800 (#1& 2 term.) 3 & 1 | WC-20 (#3 & 4 term.) 3 & 1 |
| Special Notes → | 9 | 8 | 9 | | 9 | 9 |

⑨ Connect a 56MMF capacitor from term. "T" to open end of R105 (Original term. #3 connection.)
⑩ If picture is out of phase , reverse primary or secondary of replacement width coil.
10 Connect a 56MMF capacitor from term. #5 to open end of R105 (Original term #3 connection).
11 Connect a 56MMF capacitor from term. #7 to open end of R105 (Original term. #3 connection).

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No | IMPEDANCE PRI | IMPEDANCE SEC | TRUETONE Part No | Stancor Part No | Merit Part No | Triad Part No | Halldorson Part No | Thordarson Part No | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | REPLACEMENT DATA | | | | | |
| T8 | 5.1KΩ | 3.4Ω | 51X106 | A-3877 | A-2930 | S-3X | 21U07 | 24851 | |

## SPEAKER

| ITEM No. | RATINGS SIZE | FIELD | V C IMP | TRUETONE Part No | JENSEN Part No | QUAM Part No | NOTES |
|---|---|---|---|---|---|---|---|
| | | | | REPLACEMENT DATA | | | |
| SP1 | 8" | PM | 3.4Ω | L2A518 | ST-116 Mod. P8-U | 8A21 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES PRI. | DC RES SEC. | TRUETONE Part No | MEISSNER Part No | MERIT Part No. | MILLER Part No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | | | REPLACEMENT DATA | | | | |
| L1A | Ant.Coil | 0Ω CT | 0Ω | 9A2278-1 | | | | Channel 2 |
| B | Ant.Coil | 0Ω CT | 0Ω | 9A2278-2 | | | | Channel 3 |
| C | Ant.Coil | 0ΩCT | 0Ω | 9A2278-3 | | | | Channel 4 |
| D | Ant.Coil | 0Ω CT | 0Ω | 9A2278-4 | | | | Channel 5 |
| E | Ant.Coil | 0Ω CT | 0Ω | 9A2278-5 | | | | Channel 6 |
| F | Ant.Coil | 0Ω CT | 0Ω | 9A2278-6 | | | | Channel 7 |
| G | Ant.Coil | 0Ω CT | 0Ω | 9A2278-7 | | | | Channel 8 |
| H | Ant.Coil | 0Ω CT | 0Ω | 9A2278-8 | | | | Channel 9 |
| I | Ant.Coil | 0Ω CT | 0Ω | 9A2278-9 | | | | Channel 10 |
| J | Ant.Coil | 0Ω CT | 0Ω | 9A2278-10 | | | | Channel 11 |
| K | Ant. Coil | 0Ω CT | 0Ω | 9A2278-11 | | | | Channel 12 |
| L | Ant. Coil | 0Ω CT | 0Ω | 9A2278-12 | | | | Channel 13 |
| L2 | Fil. Choke | 0Ω | | 34A-546 | | | | |
| L3 | Neut. Coil | 0Ω | | 31B-286 | | | | |
| L4A | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-1 | | | | Channel 2 |
| B | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-2 | | | | Channel 3 |
| C | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-3 | | | | Channel 4 |
| D | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-4 | | | | Channel 5 |
| E | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-5 | | | | Channel 6 |
| F | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-6 | | | | Channel 7 |
| G | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-7 | | | | Channel 8 |
| H | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-8 | | | | Channel 9 |
| I | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-9 | | | | Channel 10 |
| J | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-10 | | | | Channel 11 |
| K | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-11 | | | | Channel 12 |
| L | RF, Mixer Grid & Osc. Coil | 0Ω | | 9A2279-12 | | | | Channel 13 |
| L5 | Fil. Choke | 0Ω | | 34A-575 | | | | |
| L6 | RF Choke | 0Ω | | 31B-295 | | | | |
| L7 | 1st. Video IF | .8Ω | | 31A-078 | | | | |
| L8 | RF Coil | 1.1Ω | | 31B-230 | | | | |
| L9 | 2nd.Video IF | .3Ω | .3Ω | 9A2230 | 17-1063 | TV-116 | 6249 | |
| L10 | 3rd. Video IF | .3Ω | .3Ω | 9A2230 | 17-1064 | TV-116 | 6250 | |
| L11 | Fil. Choke | 0Ω | | 9A2033 | 19-3001 | TV-159 | 6802 | |
| L12 | 4th. Video IF | .9Ω | .2Ω | 9A2333 | | | | Includes 21.7MC trap |
| L13 | Series Peaking Coil | 10Ω | | 36A35 | 19-7100 * | TV-151 * | 6632 * | 100 Microhenries, wound on 10KΩ resistor |
| L14 | Shunt Peaking Coil | 17Ω | | 36A27 | 19-3300 | | 6155 | 325 Microhenries |
| L15 | 4.5MC Trap | .3Ω | | 9A2074 | 20-1004 | TV-151 | 1689 | |
| L16 | Shunt Peaking Coil | 6.5Ω | | 36A1 | 19-7100 | TV-151 | 6632 | 100 Microhenries |
| L17 | Shunt Peaking Coil | 14Ω | | 36A23 | 19-7100 ■ | TV-151 ■ | 6632 ■ | 100 Microhenries, wound on 470Ω resistor |
| L18 | Series Peaking Coil | 13Ω | | 36A12 | 19-4160 | TV-154 ▲ | 4644 ▲ | 160 Microhenries, wound on 22KΩ resistor |
| L19 | Shunt Peaking Coil | 14Ω | | 36A2 | 19-3180 | TV-154 | 6189 | 190 Microhenries |
| L20 | 1st.Sound IF | 2.4Ω | | 9A2201 | 16-3445 ▲ | TV-113 † | 6470A † | |
| L21 | 2nd.Sound IF | 2.6Ω | 2.3Ω | 9A2323 | 16-3445 ▲ | TV-113 | 6203 | |
| L22 | Ratio Det. | 3.9Ω | .6ΩCT | 9A2295 | 17-1033 | TV-110 | 1488 | Tertiary winding - .5Ω |
| L23 | Horiz. Osc. | 63Ω | | 9A2096 | 19-1576 | TV-153 | 6210 | |

* Parallel with 10KΩ resistor.
■ Parallel with 470Ω resistor.
▲ Parallel with 22KΩ resistor.
♦ Use one winding and drill mounting holes.
† Use one winding only.
▲ Drill new mounting hole.

# PARTS LIST AND DESCRIPTIONS (Continued)

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | TOTAL DIRECT CURRENT | D. C. RESISTANCE | INDUCTANCE (0 CURRENT 1000 ~) | TRUETONE PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| L24 | .230ADC | 40.6Ω | .83 Hy. | 52X95 | C-2326 ① | C-2996 ① | C-23X ① | C5037 ① | 26C44 |

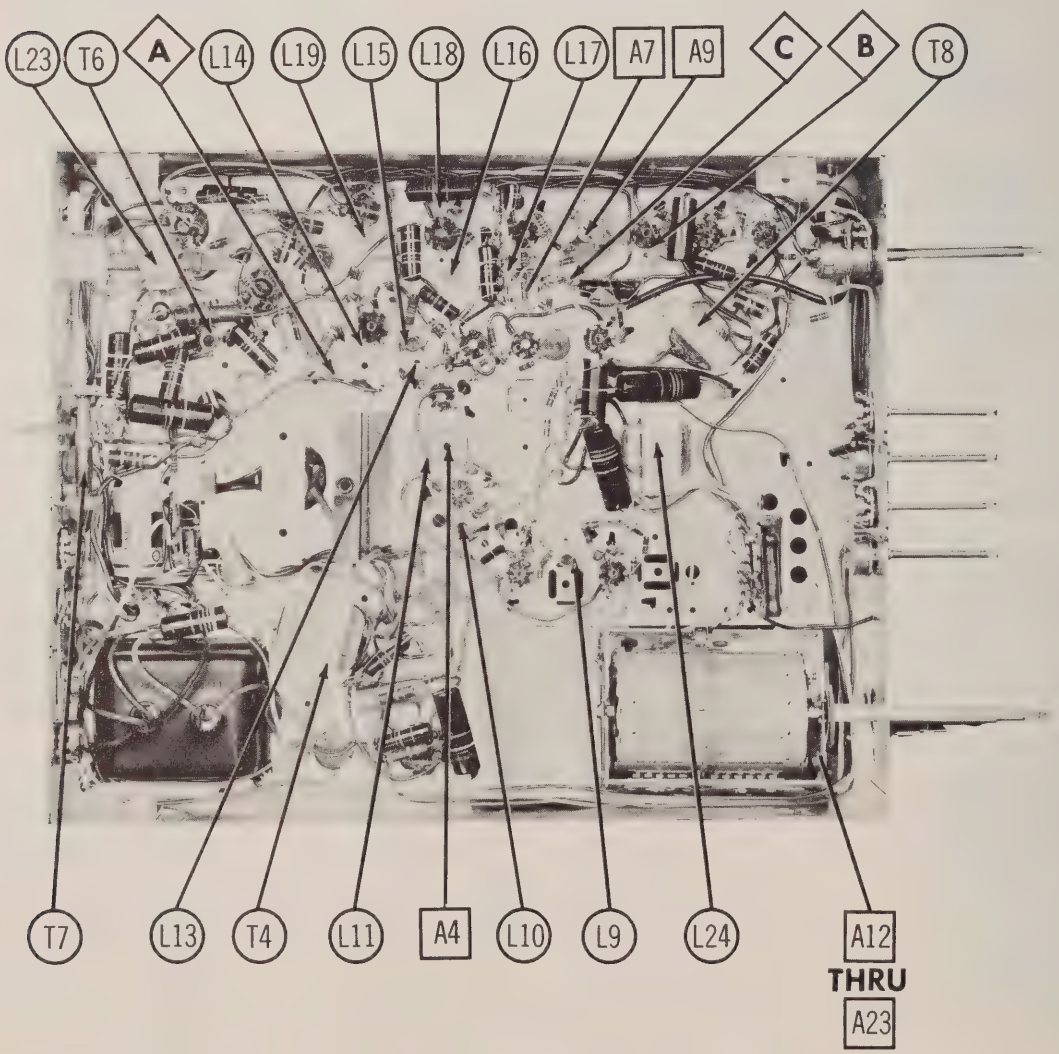
① Drill one new mounting hole.

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | TRUETONE PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG S/B | 4/10 A 125 V. | 16X147-3 | 16X146 | 313.400 ( 4/10 A-3AG-S/B ) | 357001 | MDL 4/10 | 4405 |

## MISCELLANEOUS

| ITEM No. | PART NAME | TRUETONE PART No. | NOTES |
|---|---|---|---|
| M2 | Dial Light | 7A32 | Bayonet, type # 51 |
| M3 | Tuner | 25A1095 | VHF |
| M4 | Focus Magnet | 2A438-2 | Includes centering device |
| M5 | Ion Trap | 2A421 | |
| B2 | Trimmer Cap. | 17A269 | Horiz. Drive (120—400 MMF) |
| | Knob | 10A820-1 | Fine Tuning |
| | Knob | 10A821-1 | Contrast |
| | Knob | 10A812-1 | Channel Selector |
| | Knob | 10A779 | Off/on-volume |
| | Knob | 10A826 | Red - Secondary controls |
| | Safety Glass | 17X180 | |
| | Mask | 4X1230-1 | |




CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

# TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

## POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V22. Check M1 fuse. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Substitute V22. Check B+ filter and decoupling network.

## HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V18, V19, V20 and V21. Check waveform W17.

| If Satisfactory | If Unsatisfactory |
|---|---|
| Check T3, T5A, T6, T7, C79, C80, C82, C78, R101, R102 and other associated components. | Check L23, C74, C75, R94, R92, R91 and other associated components. |

INSUFFICIENT HIGH VOLTAGE

Check by substitution V19, V20, V21 and V22. Check adjustments B2, B3, and B4. Check R100, R101, R102, R99, C77, C79, C80, C82 and other associated components.

BLOOMING

Check by substitution V18, V19, V20, V21 and V22. Check R104, R103 and R100. Check adjustments B2 and B4.

## GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video ".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak Or No Sound ".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6, V7, V8 and V9. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

# SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

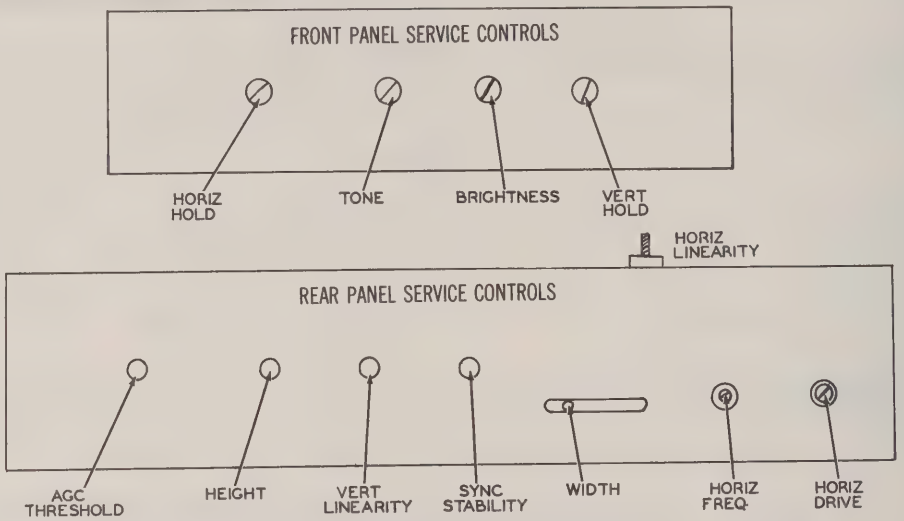
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 5 wood screws holding metal molding at top of the safety glass. Remove metal strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION




SPECIAL ADJUSTMENTS: AGC THRESHOLD CONTROL

Tune in the strongest TV station available.

Turn the AGC threshold control clockwise until a buzz in the sound and a washed out picture appears, then turn the control slightly counter clockwise for clearest picture and best sound.

SYNC STABILITY CONTROL

With the picture locked in slowly turn the sync stability control clockwise until bending occurs at top of picture. Turn control SLIGHTLY counter clockwise until bending disappears. In general, the weaker the signal area the more clockwise the control should be turned.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis. Set the Horiz. Hold Control at the Mid-position of its range and adjust the Horiz. Freq. slug L23 until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary L22 located on top of chassis. (See tube placement chart.)

FUSES

One fuse is used for L.V. Power Supply) protection. (For location see Tube Placement Chart.)

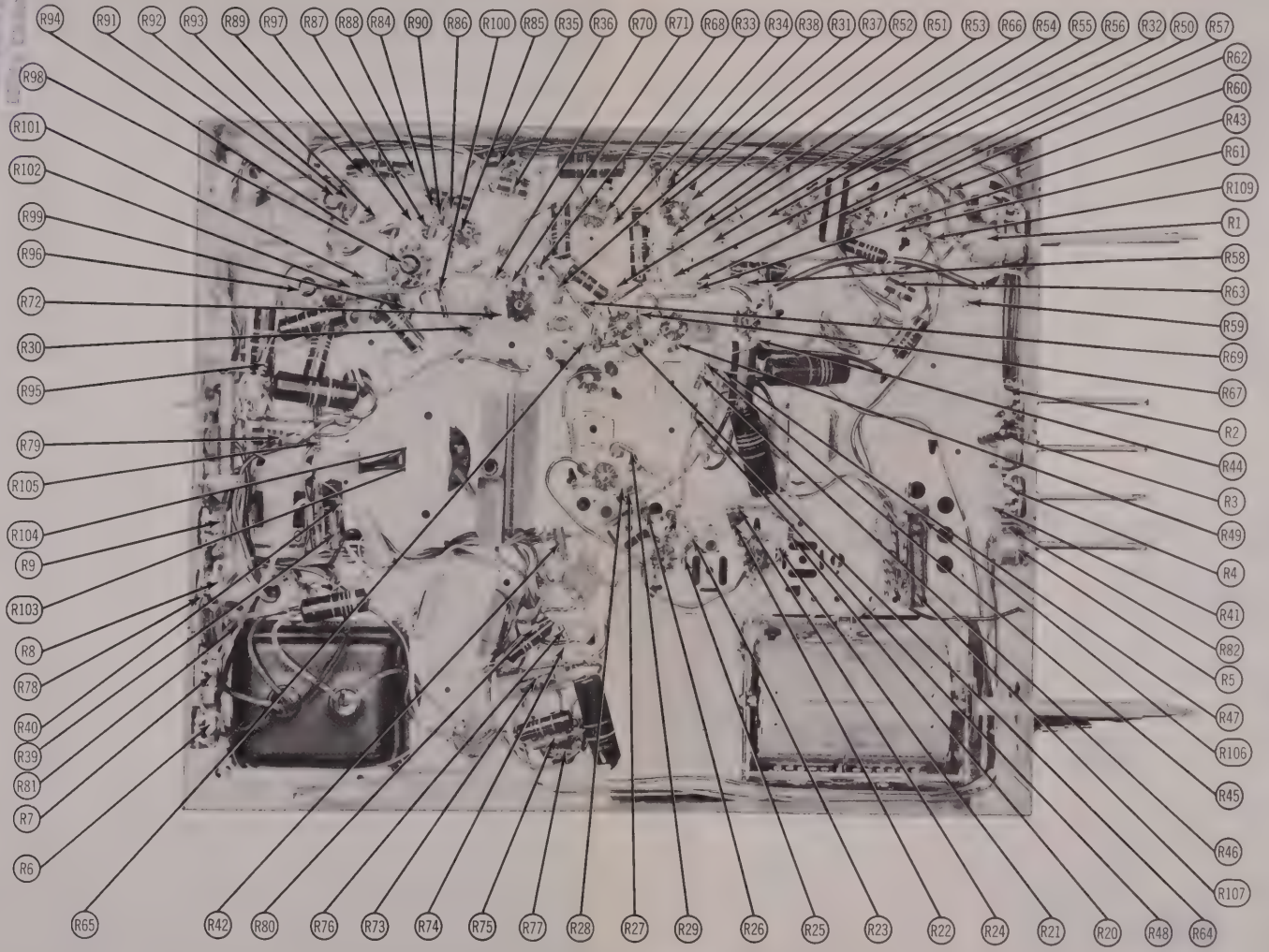
CENTERING

Cen tering is accomplished mechanically by means of a centering lever on the P.M. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

# DISASSEMBLY INSTRUCTIONS

1. Remove 4 Push-on type control knobs from front panel.
2. Remove 4 wood screws. Remove rear cover.
3. Disconnect antenna lead from antenna terminal.
4. Disconnect speaker leads from speaker.
5. Remove 5 chassis bolts.
6. Remove chassis.
7. Remove 4 nuts from speaker. Remove speaker.

PROPERTY OF
L. F. E. A. W. SHIP

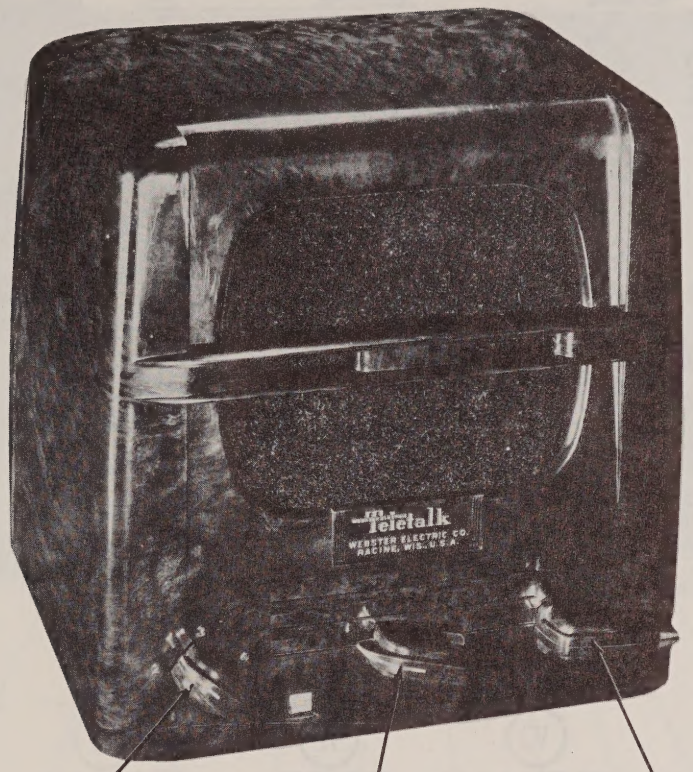



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

# WEBSTER ELECTRIC
# MODELS 605M, S, 606M, S, 610M, S

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

WEBSTER ELECTRIC
MODELS 605M, S, 606M, S, 610M, S




WEBSTER ELECTRIC
MODELS 605M, S, 606M, S, 610M, S

| | |
|---|---|
| TRADE NAME | Webster-Electric "Teletalk" Models 605M, -S, 606M, -S, 610M, -S |
| MANUFACTURER | Webster Electric Co., Racine, Wisc. |
| TYPE SET | AC-DC Operated Intercommunication System Master Unit |
| TUBES (Three) | Types 12BA6 AF Amp., 50C5 Audio Output, 35W4 Rectifier |
| POWER SUPPLY | 110-125 Volts AC-DC RATING .16 Amp. @ 117 Volts AC |

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

# PARTS LIST AND DESCRIPTIONS

WEBSTER-ELECTRIC
MODEL 605M

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

| ITEM No. | USE | REPLACEMENT DATA | | RETMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | Webster Electric PART No. | STANDARD REPLACEMENT | | |
| V1 | AF Amplifier | 12BA6 | 12BA6 | 7BK | |
| V2 | Audio Output | 50C5 | 50C5 | 7CV | |
| V3 | Rectifier | 35W4 | 35W4 | 5BQ | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | WebsterElectric PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | ■50 | 150 | | AFH3-77 | | C056 | | FP310 | TVL-3430 | |
| B | ▲30 | 150 | | | | | | | | |
| C | 10 | 25 | | | | | | | | |
| C2 | .006 | 200 | | P288-006 | D6-602 | PJ2D6 | GP2-333-602 | PT426 | 2TM-D6 | |
| C3 | .02 | 400 | | P488-02 | DF-204 | PTE4S2 | | PT412 | 4TM-S2 | |
| C4 | .005 | 600 | | P688-005 | D6-502 | PTE6D5 | GP2-333-502 | PT625 | 6TM-D5 | |
| C5 | .1 | 400 | | P488-1 | | PTE4P1 | | PT401 | 4TM-P1 | |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Webster Electric PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 500KΩ | ½ | S6926 | Q13-133 | AG-60-Z | B-60-S | U-48 | Volume |
| B | Shaft | | Not Req. | Not Req. | FS-3 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | Webster Electric PART No. | IRC PART No. | |
| R2 | 10 Meg | ½ | | BTS-10 Meg | |
| R3 | 1.5Meg | ½ | | BTS-1.5Meg | |
| R4 | 150KΩ | ½ | | BTS-150K | |
| R5 | 160Ω | ½ | | BTS-160 | |

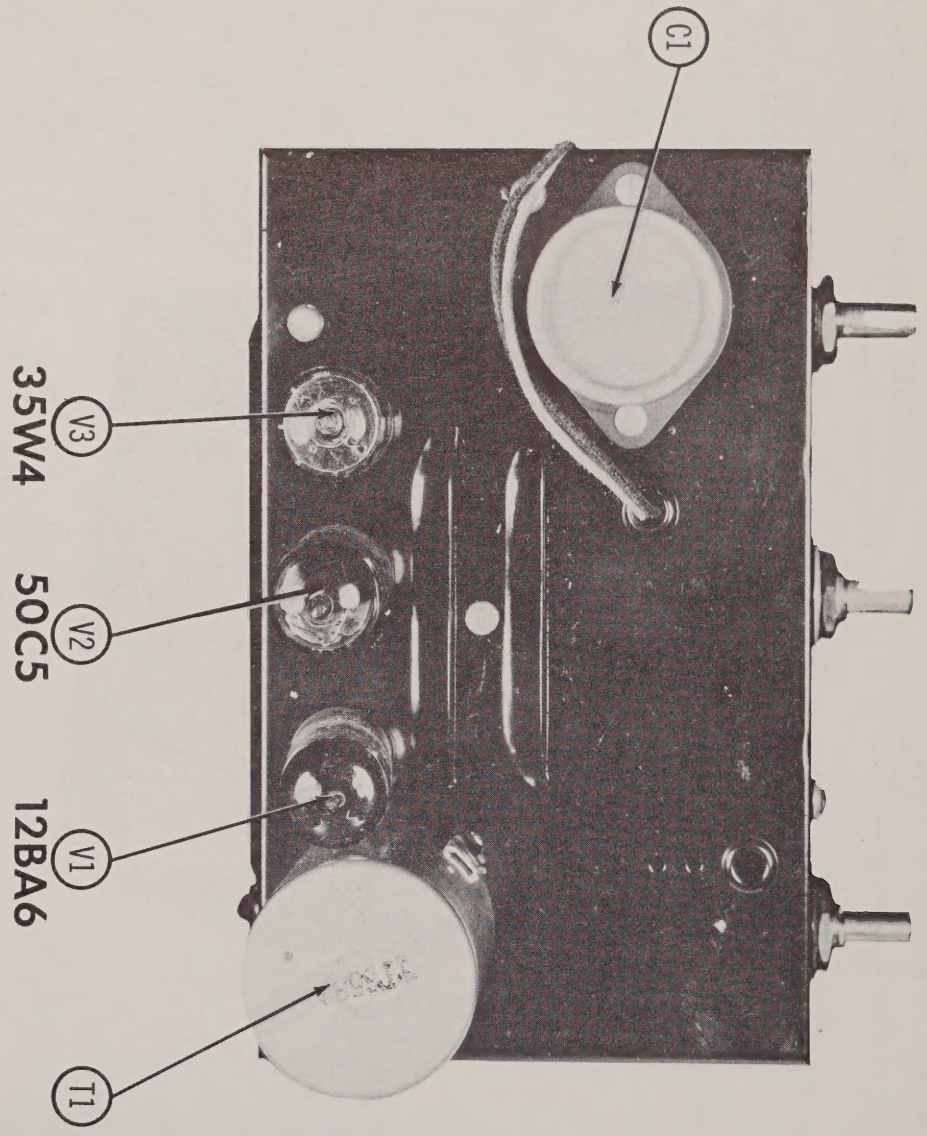
| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | Webster Electric PART No. | IRC PART No. | |
| R6 | 100Ω | ½ | | BTS-100 | |
| R7 | 5100Ω | ½ | | BTS-5100 | |
| R8 | 200Ω | 10 | | 1 3/4A-200 | |
| R9 | 51Ω | ½ | | BTS-51 | |

## TRANSFORMER (INPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | SEC. 3 | Webster Electric PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. |
| T1 | 1.3Ω | 1.2KΩ | | | ① | | | | | |

① Turns ratio 1 to 250.

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Webster-Electric PART No. | Stancor PART No. | Merit PART No. | Triad PART No. | Halldorson PART No. | Thordarson PART No. | |
| T2 | 2.5KΩ | 45Ω | | | | | | | |

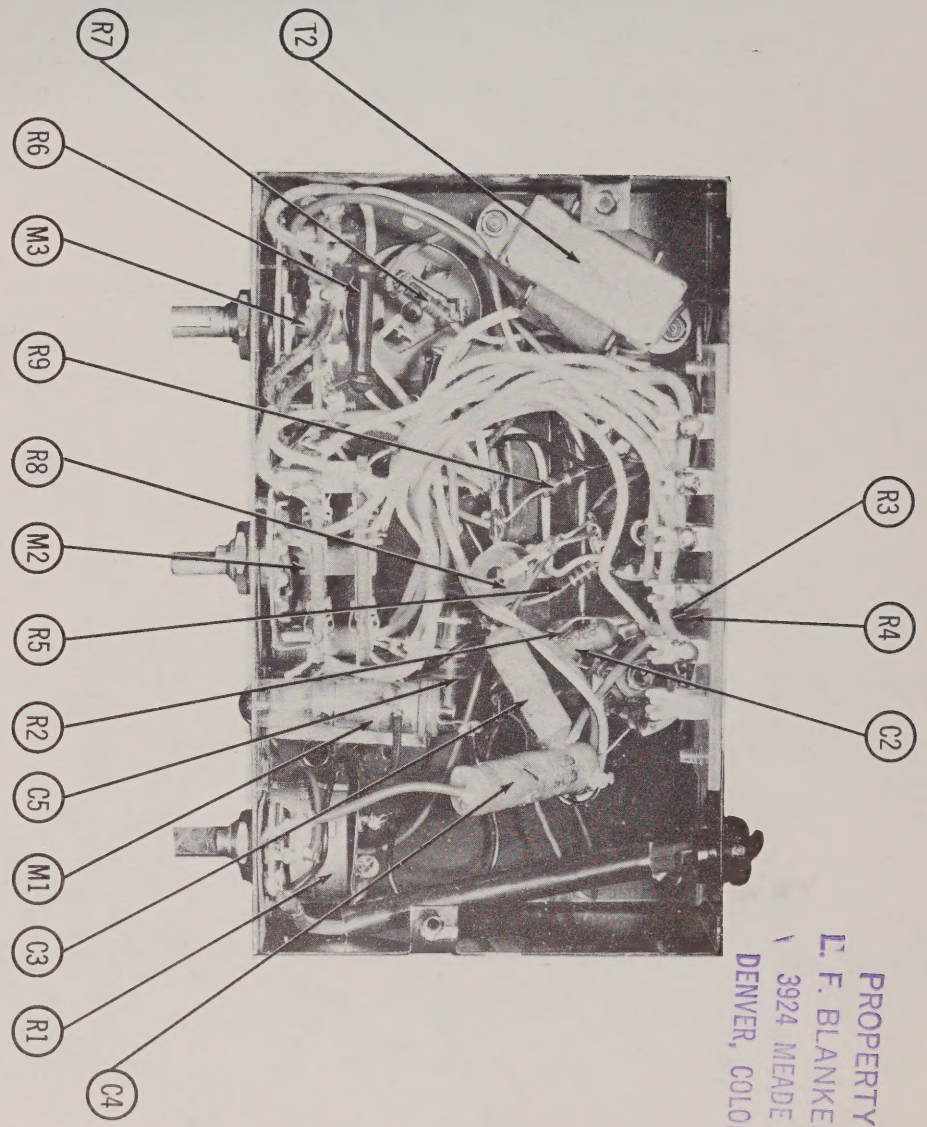
## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | Webster-Electric PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 45Ω | | ST-739 ① Mod. P4-X | 4A07Z45 ① | ① Cut corners to fit speaker mount |

## MISCELLANEOUS

| ITEM No. | PART NAME | Webster Electric PART No. | NOTES |
|---|---|---|---|
| M1 | Dial Light | | #47 Bayonet |
| M2 | Switch | | Station Selector |
| M3 | Switch | | Talk-listen |

# CHASSIS—BOTTOM VIEW

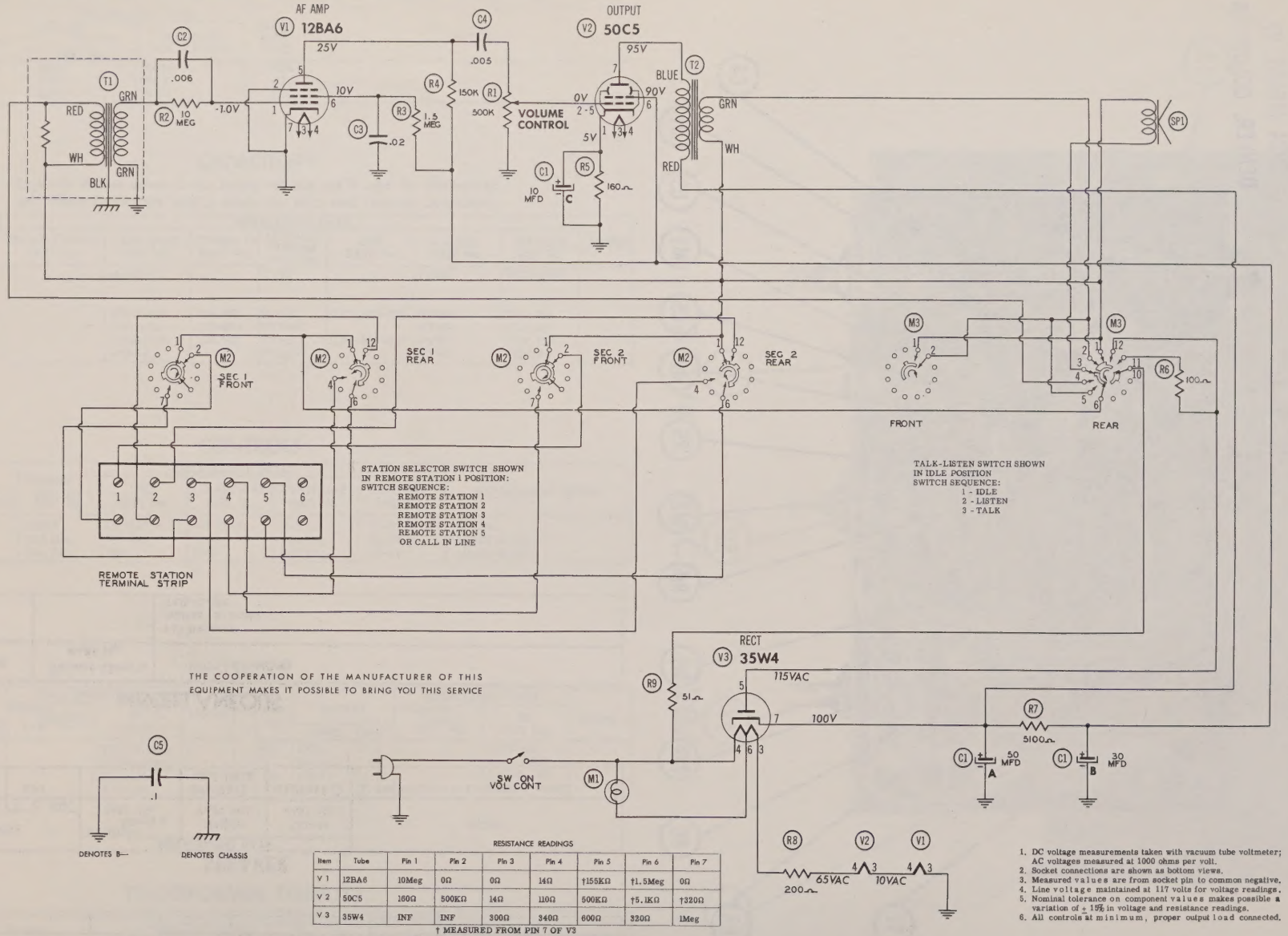



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO





WEBSTER-ELECTRIC
MODEL 605M




RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V 1 | 12BA6 | 10Meg | 0Ω | 0Ω | 14Ω | †155KΩ | †1.5Meg | 0Ω |
| V 2 | 50C5 | 160Ω | 500KΩ | 14Ω | 110Ω | 500KΩ | †5.1KΩ | †320Ω |
| V 3 | 35W4 | INF | INF | 300Ω | 340Ω | 600Ω | 320Ω | 1Meg |

† MEASURED FROM PIN 7 OF V3

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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